SULLAIR

Monitoring Management System

OPERATOR'S MANUAL AND PARTS LIST

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Part Number

02250148-838

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TABLE OF CONTENTS

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL

		Page
INTRODUCTION		1
Section 1 SAFETY		
	1.1 GENERAL	3
	1.2 PERSONAL PROTECTIVE EQUIPMENT	3
	1.3 PRESSURE RELEASE	4
	1.4 FIRE AND EXPLOSION	4
	1.5 MOVING PARTS	5
	1.6 ELECTRIC SHOCK	5
	1.7 HOT SURFACES, SHARP EDGES AND SHARP CORNERS	5
	1.8 LIFTING	5
Section 2 GENERAL DESCRIPTIONS		
	2.0 REMOTE NETWORK CONNECTIONS	7
	2.1 TERMS	7
	2.2 eCONNECT COMPATIBILITY	7
	2.3 DATA LOGGING INTRODUCTION	7
	2.4 EMAIL FAULT NOTIFICATION	9
	2.5 ANALOG I/O CONFIGURATION	9
Section 3 LOCAL AREA NETWORK CONFIGURATION & INSTALLATION		
	3.0 CONFIGURATION INTRODUCTION	10
	3.1 CONSOLE INTERFACE	10
	3.1.1 RS232	10
	3.1.1.1 REQUIREMENTS	10

Continued...

TABLE OF CONTENTS

Section 3
LOCAL AREA NETWORK CONFIGURATION & INSTALLATION (CONT.)

11 3.1.1.2 CONNECTION
11 3.1.1.3 HYPERTERMINAL CONFIGURATION
12 3.1.1.3.1 COM1 CONFIGURATION PROCEDURE
12 3.1.2 COMMAND OVERVIEW
16 3.1.2.1 HYPERTERMINAL USAGE PROCEDURE
16 3.1.3 ETHERNET CONNECTION - CABLE CONFIGURATION
17 3.2 ADMINISTRATOR PAGE
20 3.3 USER SCREENS

Section 4
DIRECT CONFIGURATION & INSTALLATION

23 4.0 CONFIGURATION INTRODUCTION
23 4.1 PC SETTINGS
25 4.1.1 ETHERNET CONNECTION - CABLE CONFIGURATION
25 4.2 ADMINISTRATOR PAGE
28 4.3 USER SCREENS

Section 5
OPERATION

31 5.0 EMBEDDED WEB SERVER INTRODUCTION
32 5.1 AUTHENTICATION
32 5.2 eCONNECT STATUS
33 5.3 USER REALM
33 5.3.1 NETWORK STATUS
34 5.3.2 COMPRESSOR STATUS
36 5.3.3 I/O STATUS
37 5.3.4 CHANNEL CHART
38 5.3.5 CHANNEL DATA
39 5.3.6 FAULT LOG
39 5.4 ADMINISTRATOR REALM

Continued...

TABLE OF CONTENTS

Section 6
ILLUSTRATIONS AND PARTS LIST

43 6.1 eCONNECT - DIMENSIONS

44 6.2 eCONNECT - BASIC

45 6.3 eCONNECT - WIRING DIAGRAM (BASIC)

46 6.4 eCONNECT - OPTION ONE

47 6.5 eCONNECT - WIRING DIAGRAM (OPTION ONE)

48 6.6 eCONNECT - OPTION TWO

49 6.7 eCONNECT - WIRING DIAGRAM (OPTION TWO)

50 6.8 eCONNECT - OPTION THREE

51 6.9 eCONNECT - WIRING DIAGRAM (OPTION THREE)

INTRODUCTION

Thank you for purchasing the Sullair eConnect™ Remote Monitoring Solution. The eConnect's core element is an Ethernet Single Board Computer (SBC), a high-performance processor that offers built-in digital and analog I/O combined with Ethernet and serial connectivity in a compact form. The eConnect is packaged in a Type 4/12 rated enclosure including the power supply and optional ancillary equipment.

The Sullair eConnect is a state-of-the-art product and service package that provides complete 24/7 "real time" monitoring of your air compressors and in certain option configurations, system monitoring as well. Please familiarize yourself with the product and be sure to thoroughly read the instructions and precautions contained in this manual. In addition, please make sure that this instruction manual is delivered to the end user of the eConnect, and keep this instruction manual in a safe place for future reference or unit inspection.

This Sullair eConnect User's Manual describes the device configuration, programming and network interfacing for the eConnect. Note that this manual only indicates the software capabilities of the eConnect, which may not utilize all available hardware features of the device.

If you do not have copies available of the documents relevant to your installation, please contact Sullair Customer Service or your local distributor to obtain them, or you can reach a Sullair representative at:

SULLAIR CORPORATION
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SERVICE DEPARTMENT
☎: 1-888-775-1604 (U.S.A. & Canada Only)
Fax: (219) 874-1205
www.sullaircompressors.com

Section 1
SAFETY

1.1 GENERAL

NOTE

THIS PRODUCT IS NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE-SUPPORT DEVICES OR SYSTEMS. Life-support devices or systems are devices or systems intended for surgical implantation into the body or to sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling and user's manual, can be reasonably expected to result in significant injury.

No complex software or hardware system is perfect. Bugs may always be present in a system of any size. In order to prevent danger to life or property, it is the responsibility of the system designer to incorporate redundant protective mechanisms appropriate to the risk involved.

NOTE

The Sullair eConnect is intended as a remote monitoring system ONLY. Although some control parameters can be changed remotely with proper security access, the eConnect is not to be used to start and stop compressors or otherwise interfere with the local compressor safety or control operations. Always review the condition of the compressor and surrounding area prior to clearing a fault or starting the machine.

Sullair Corporation and its subsidiaries design and manufacture all of its products so they can be operated safely. However, the responsibility for safe operation rests with those who use and maintain these products. The following safety precautions are offered as a guide, which, if conscientiously followed, will minimize the possibility of accidents throughout the useful life of this equipment.

Failure to follow the instructions, procedures and safety precautions in this manual can result in accidents and injuries.

DO NOT attempt to operate this equipment with a known unsafe condition. Tag the piece of equipment and render it inoperative so others, who may not know of the unsafe condition, will not attempt to operate it until the condition is corrected.

Install, use and operate this equipment only in full compliance with all pertinent OSHA regulations and all applicable Federal, State, and Local codes, standards and regulations.

NOTE

DO NOT modify the equipment and/or wiring in any way except with written factory approval.

While not specifically applicable to all systems, most of the precautionary statements contained herein are applicable to most systems and the concepts behind these statements are generally applicable to all systems.

1.2 PERSONAL PROTECTIVE EQUIPMENT

Prior to installing or operating the eConnect Remote Monitoring System and associated instrumentation, owners, employers, and users should become familiar with, and comply with, all applicable OSHA regulations and/or any applicable Federal, State and Local codes, standards, and regulations relative to personal protective equipment, such as eye and face protective equipment, respiratory protective equipment, equipment intended to protect the

extremities, protective clothing, protective shields and barriers, pressure relief devices and electrical protective equipment, as well as noise exposure administrative and/or engineering controls and/or personal hearing protective equipment.

1.3 PRESSURE

A. Prior to working with the eConnect Remote Monitoring System and associated instrumentation make sure that the equipment is suitable and rated to be installed at the maximum potential pressure in the compressed air system. Never perform maintenance on the equipment unless it has been uninstalled from the system and rendered inoperative, locked out and tagged, and be sure the system pressure or vacuum to the equipment has been shut off, vented and the pressure or vacuum is effectively zero (0).

B. DO NOT allow the system to exceed the rated equipment pressure during operation. Be sure that the compressed air system high discharge pressure switches and pressure relief valves are properly installed, operational and set prior to installing equipment or damage could occur.

C. Secure all connections by wire, chain or other suitable retaining devices to prevent tools or hose ends from being accidentally disconnected and expelled.

D. Vent ALL internal pressure prior to opening any line, fitting, hose, valve, drain plug, connection or other component. To avoid hazardous expulsion of system components always verify that system pressure has been reduced to zero and proper bleed down time has been allowed before attempting to remove pressurized components from the system. Also always be very attentive and careful when removing equipment and listen and feel for signs of escaping pressurized air to avoid hazardous expulsions.

E. Keep personnel out of line with and away from the points of compressed air discharge.

F. Use air pressure less than 30 psig (2.1 bar) for cleaning purposes, and then only with effective chip guarding and personal protection equipment per OSHA standards.

G. DO NOT engage in horseplay with compressed air as serious injury or death may result.

1.4 FIRE AND EXPLOSION

A. Clean up spills of lubricant or other combustible substances immediately if they occur.

B. DO NOT permit fluids to accumulate on, under or around the external or internal surface of the eConnect Remote Monitoring System and associated instrumentation as fire may result.

C. Disconnect and lockout all power at the source prior to attempting repairs or cleaning of the eConnect Remote Monitoring System and associated instrumentation equipment.

D. Keep electrical wiring, including all terminals, cabling and components or controls in good condition. Replace any wiring that has cracked, become cut, abraded or otherwise degraded. Replace terminals that are worn, discolored or corroded. Keep all terminals and pressure connections clean and tight.

E. Keep grounded and/or conductive objects, such as tools, away from exposed live electrical parts such as terminals to avoid arcing which might serve as a source of ignition.

F. Keep a suitable fully charged class BC or ABC fire extinguisher nearby when operating, installing or servicing the eConnect Remote Monitoring System and associated instrumentation.

G. DO NOT attempt to operate the eConnect Remote Monitoring System and associated instrumentation in any classification of hazardous environment unless the equipment has been specifically designed and manufactured for that duty.

1.5 MOVING PARTS

A. Wear snug fitting clothing and confine long hair when working around compressed air or industrial equipment, especially when exposed to hot or moving parts.

B. Disconnect and lock out all power at source and verify that all circuits are de-energized to minimize the possibility of accidental start-up or operation prior to attempting installation, removal or repairs. This is especially important because external controls often remotely control compressors or vacuum pumps.

C. Keep a first aid kit handy. Seek medical attention promptly in case of injury. **DO NOT** ignore small cuts and bruises as they may lead to infection.

1.6 ELECTRICAL SHOCK

A. The eConnect Remote Monitoring System and associated instrumentation should be installed and maintained in full compliance with all applicable Federal, State and Local codes, regulations and standards, including those of the National Electrical Code, and also including those relative to equipment grounding conductors, and only by personnel that are trained, qualified and delegated to do so.

B. Keep all parts of the body and any hand-held tools or other conductive objects away from exposed live parts of electrical systems. Maintain dry footing, stand on insulating surfaces and **DO NOT** contact any other portion of the equipment when making installations, removals, adjustments or repairs to exposed live parts of the electrical system. Make all such installations and adjustments or repairs with one hand only, so as to minimize the possibility of creating a current path through the heart.

C. Attempt installations or repairs only in clean, dry and well-lit and ventilated areas.

D. DO NOT leave any equipment unattended with open electrical enclosures. If necessary to do so, then disconnect, lock out and tag all power at source so others will not inadvertently restore power.

E. Disconnect, lock out, and tag all power at source prior to attempting installation/removal and repairs or adjustments and prior to handling any ungrounded conductors.

1.7 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

A. Avoid bodily contact with hot fluid, hot coolant, hot surfaces and sharp edges and corners.

B. Keep all parts of the body away from all points of air discharge.

C. Wear personal protective equipment including gloves and head covering when working in, on or around industrial or compressed air equipment.

D. Keep a first aid kit handy. Seek medical assistance promptly in case of injury. **DO NOT** ignore small cuts as they may lead to infection.

E. Keep hands, feet, floors, controls and walking surfaces clean and free of fluid, water, or other liquids to minimize the possibility of slips and falls.

1.8 LIFTING

A. DO NOT attempt to lift if the eConnect Remote Monitoring System is more weight then you can safely handle by yourself during installation. Get assistance of either personnel or mechanical as required.

NOTES

Section 2
GENERAL DESCRIPTIONS

2.0 REMOTE NETWORK CONNECTIONS

Connection to the eConnect Unit is a standard Ethernet interface. The unit can be connected directly to any 10M/100M Hub or switch port.

For remote connection there are three (3) solutions available:

1. **Direct connection to the Internet**: The eConnect unit is connected via DSL or broadband to the Internet.

2. **VPN connection through a firewall**: VPN that is provided via a firewall connected to the Internet. A user ID & password is provided for technicians to access the LAN the eConnect is connected to.

3. **Dial-up Modem**: An external router with a dial-up modem that will connect to the eConnect via its Ethernet adapter. A technician will call a phone number provided by the site owner.

NOTE

Modem and/or any hardware requirements external to the eConnect are to be provided by others.

2.1 TERMS

Broadband – High Speed Internet access provided by Cable TV Companies.

DSL – Digital Service Line – High Speed Internet access provided by Telephone Companies.

Ethernet – A method for directly connecting a computer to a network in the same physical location.

ISP – Internet Service Provider.

VPN – Virtual Private Network – A secure Internet access to a LAN network through a firewall. A user name & password are required.

LAN – Local Area Network – A local network of computers at one site.

2.2 eCONNECT COMPATIBILITY

The eConnect Remote Monitoring System and associated instrumentation are compatible with the following Sullair controllers:

- Supervisor II/Deluxe (flooded screw) program number 02250148-735 or higher.
- Oil Free - not available at time of print: consult Sullair Service Department.
- Supervisor Controller (flooded screw) program number 02250148-176 or higher.
- Communication module firmware 02250149-729 or higher.

2.3 DATA LOGGING INTRODUCTION

The eConnect has 30 channels that monitor and log data. The data that each channel logs is configurable. In cases where reporting service is selected certain channels are not configurable and are locked at the factory. Three channels are locked (Capacity, P1, and T1) for every compressor in the reporting system. All 30 channels are viewable on the display. The data sources include:

Section 2
GENERAL DESCRIPTIONS

- **Compressor Parameters** – Data obtained from compressors connected to the eConnect via serial communications.
  - Temperatures T1-T5
  - Pressures P1-P4
  - Capacity
  - System Pressure: The maximum P2 value of the 16 possible machines connected to the eConnect.
  - System Demand: The sum of all capacities of the16 possible machines connected to the eConnect.
- **Analog Inputs** – The calculated unit's value from any of the 11 analog inputs.
- **Digital Inputs** – The status (1 or 0) from and of the 11 digital inputs.

Once every minute, the data for each channel is gathered, and a running average is updated according to these values. The running average for each channel is then stored in its own file located in battery backed SRAM.

Every ten minutes, the running average is reset, and a new running average is started for the next ten-minute period. This new running average is saved in the file as a new data point.

In a 24 hour period, 144 ten minute averages are saved in a file for every channel (6/hour x 24 hours = 144). The eConnect has room for 7 files of 24 hour 10 minute averages for each channel. **Table 2A** shows a pressure data logging example.

Table 2A: Pressure data logging example

Time	Pressure	# of Data Points	Running Total	Stored Running Average = ((running total + current value) / #data points)	Location in File
00:00	125	1	0	125	0
00:01	124	2	125	124.5	0
00:02	123	3	249	124	0
00:03	124	4	372	124	0
00:04	120	5	496	123.2	0
00:05	118	6	616	122.3	0
00:06	122	7	734	122.3	0
00:07	122	8	856	122.2	0
00:08	122	9	978	122.2	0
00:09	123	10	1101	122.4	0
00:10	124	1	0	124	1
00:11	125	2	124	124.5	1
00:12	125	3	249	124.7	1
00:13	125	4	374	124.8	1

Whenever the eConnect detects a change in its clock's date (either by incrementing to the next day or by the user setting a new date), the file with the oldest data is erased and written with the new date's data.

Installations that option for the Standard or Deluxe reporting features will have 12 months of consecutive data available. Whenever the eConnect detects a change in its clock's date, eConnect will transfer the previous days data to a central database used for report creation. This data is only available to customers that have contracted for the report service.

2.4 EMAIL FAULT NOTIFICATION

When a fault occurs, the eConnect will send its fault log via email to up to 4 email addresses. See *Sections* 3.2.9 and 5.4 for information on configuring fault notification recipients.

2.5 ANALOG I/O CONFIGURATION

If the eConnect device is purchased under options 1 to 3, the analog signal amplifiers will need to be configured. Configuration is completed by setting dip switches located on the I/O device to match the standard instrumentation input signal. Configuration should be completed by a qualified electrician or technician. The I/O device Owners Manual should be consulted and used for device configuration. I/O device Owners Manual can be found with the electrical diagrams and information sent with the eConnect device. I/O device signal output is set for 0 to 10 Volts at the factory, and should not be changed. Refer to *Sections* 3.2.12.2 and 4.2.10.2.

Section 3
LOCAL AREA NETWORK CONFIGURATION & INSTALLATION

3.0 CONFIGURATION INTRODUCTION

Section 3 of this manual explains the procedure for configuring the eConnect device so that it can be connected into a Local Area Network. Complete this configuration process to permit the eConnect device to communicate via the LAN network. The following are the factory-set values of the most important Ethernet parameters (see Figure 3-1 for screen view):

```
IP Address ........ 192.168.2.2
Net mask  ......... 255.255.255.0
Default Gateway ... 192.168.2.254
Name server ....... 192.168.2.1
```

If these parameters do not match with your network settings, they will need to be modified. Configuration can be achieved in one of two ways: either via a text-based console interface or an Ethernet crossover cable.

For a detailed description of each parameter listed in this Administrator set-up procedure, go to *Section 5, Operation*.

3.1 CONSOLE INTERFACE

The console interface is accessible over an RS232 serial channel and a telnet interface.

Once the eConnect has successfully been connected to the Local Area Network (LAN) and / or Internet, the eConnect can be set-up for the specific application. A local Administrator should be designated who will be responsible for making any eConnect configuration changes. These changes may include LAN settings, data logging channel set-up, I/O input configuration, parameter naming, and control parameter changes *(Section 5, Operation*). A unique username and password should be established by the Administrator to prevent unauthorized personnel from making configuration and control changes.

NOTE

The Sullair eConnect is intended as a remote monitoring system ONLY. Although some control parameters can be changed remotely with proper security access, the eConnect is not to be used to start and stop compressors or otherwise interfere with the local compressor safety or control operations. Always review the condition of the compressor and surrounding area prior to clearing a fault or starting the machine.

3.1.1 RS232

The console is accessible via an RS232 interface for direct connection to a computer's serial (COM) port. This will typically be the initial configuration channel, as the telnet interface can only be accessed once the network parameters have already been established and the device is communicating on the Ethernet network.

Use the provided serial cable to interface the eConnect to your PC (see **Table 3A**).

3.1.1.1 REQUIREMENTS

All that is needed is a computer with a standard serial (COM) port containing some sort of communications software (such as HyperTerminal, shipped with Microsoft Windows operating systems), and the provided serial cable. Any communications software and PC will work, provided they support ASCII communications at 38.4kbaud.

3.1.1.2 CONNECTION

The RS232 console uses the eConnect's serial channel #2. Connect one end of the provided serial cable to a COM port on your PC, and other end should already be connected to the eConnect device as shown in **Table 3A**.

Figure 3-1: Administrator Page

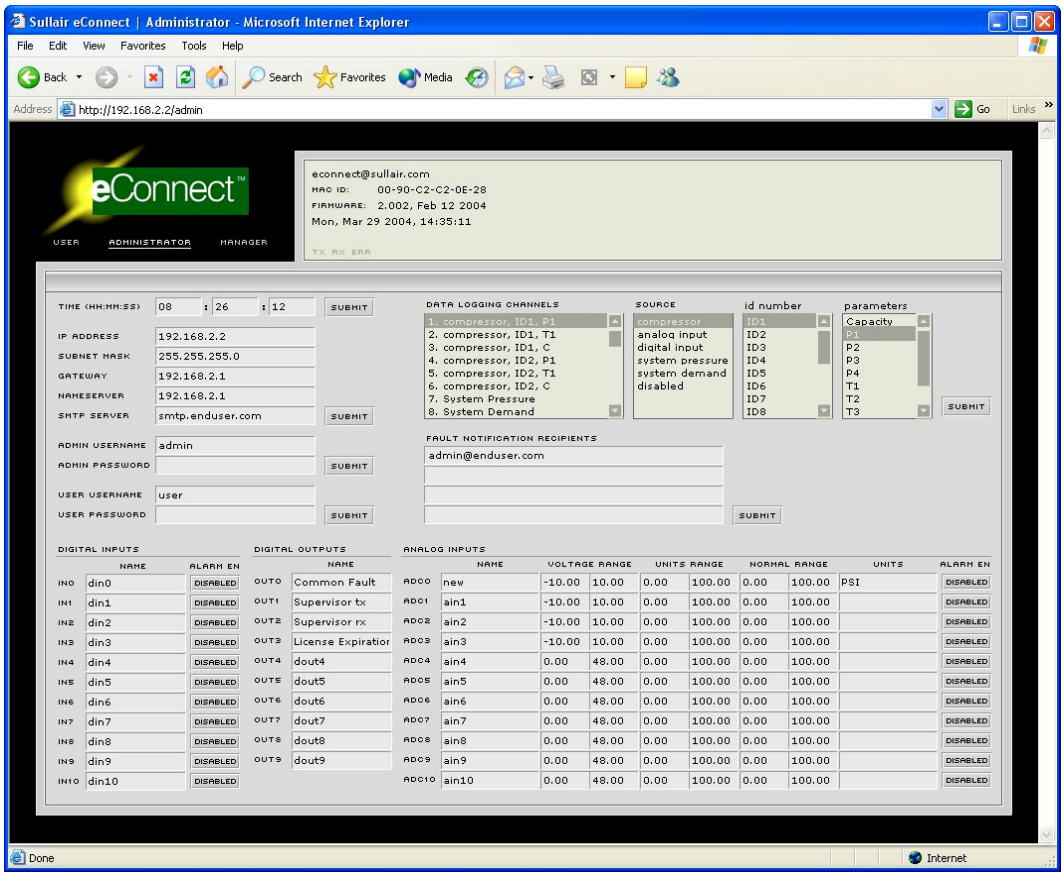


Table 3A: Wire Connections for RS232 Console Serial Cable

eConnect ***Signal Name***	*eConnect* ***Terminal***
RX	8 - RXD2
TX	9 - TXD2
GND	10 - GND

3.1.1.3 HYPERTERMINAL CONFIGURATION

As previously mentioned, any PC communication software and PC serial port can be used. The software configuration example given here will be for Windows HyperTerminal communicating via COM1.

Figure 3-2 shows the "Connect To" tab of the properties window for COM1. Figure 3-3 shows the window that appears when "Configure" is selected in the "Connect To" tab. Figure 3-4 shows the "Settings" tab of the properties window. Most of these settings are their default values: usually the only change needed is the "Bits

Per Second" setting shown in Figure 3-3.

Figure 3-2: HyperTerminal Configuration Screen #1

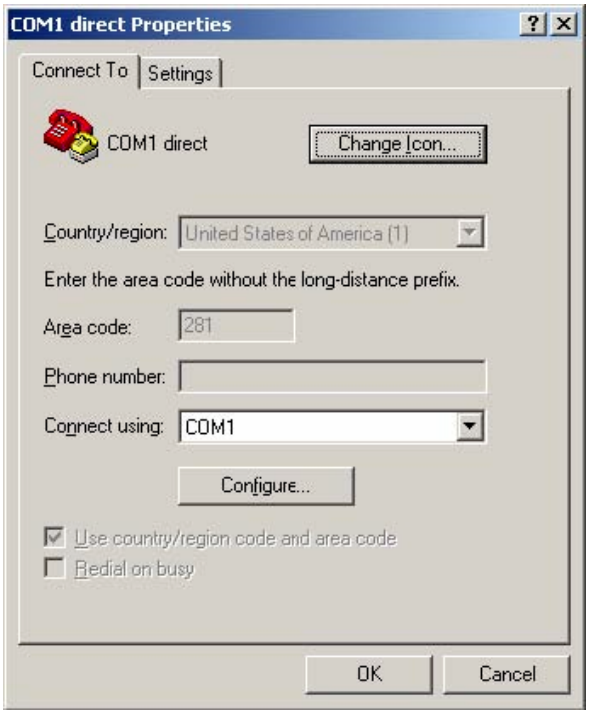
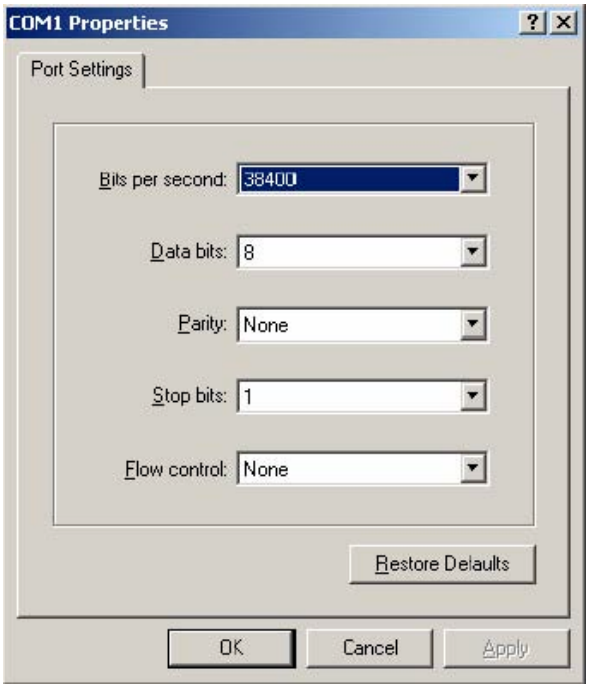


Figure 3-3: HyperTerminal Configuration Screen #2



3.1.1.3.1 COM1 CONFIGURATION PROCEDURE

1) Ensure that the eConnect device is installed properly and is ready to be powered up.

2) Ensure that the power is turned off before making the connections to the eConnect terminals (if needed).

3) Make terminal connections using the RS232 cable provided as outlined in **Table 3A** in *Section 3.1.1.2* (if needed).

4) Connect other end of cable to COM port of PC or laptop.

5) Power up eConnect device and PC or laptop.

6) Once PC or laptop is running, open up the HyperTerminal Application by doing the following:

   - Click on the "start" button in the lower left-hand corner of the computer window and follow this path:
   - Click on programs\accessories\communication\hyperterminal

7) As HyperTerminal application starts, a few pop-up windows may open up. They are (see Figures 3-2, 3-3 and 3-4 in the manual):

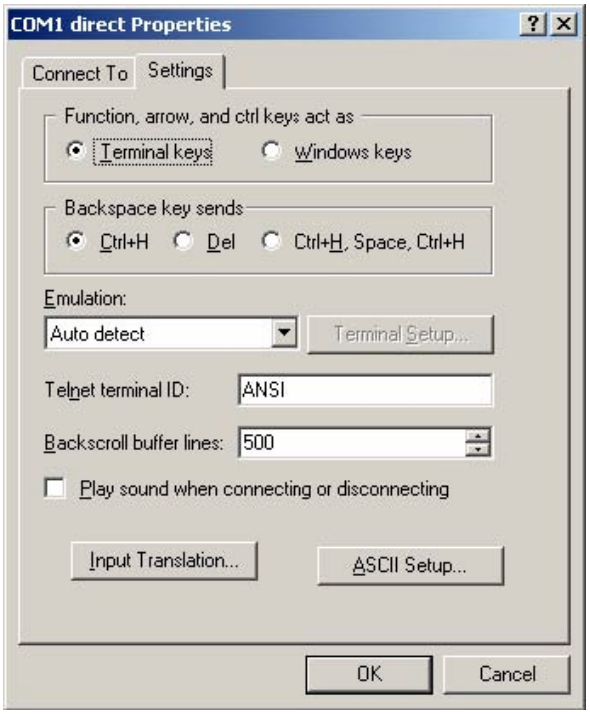
   "Communications Description" - pick any name and icon for the connection and click OK.

   "Connect Using" - make sure that this pop -up window has "COM1" in the proper box and click OK.

   "COM1 Properties" - make sure that the Bits per second box has 38400 entered, click apply and then OK.

8) All pop-up windows should close and leave only the HyperTerminal window open. If connection was successful, the window will display "ICC Console Version 1.0". Continue to *Section 3.1.2* to finish configuration.

Figure 3-4: HyperTerminal Configuration Screen #3



3.1.2 COMMAND OVERVIEW

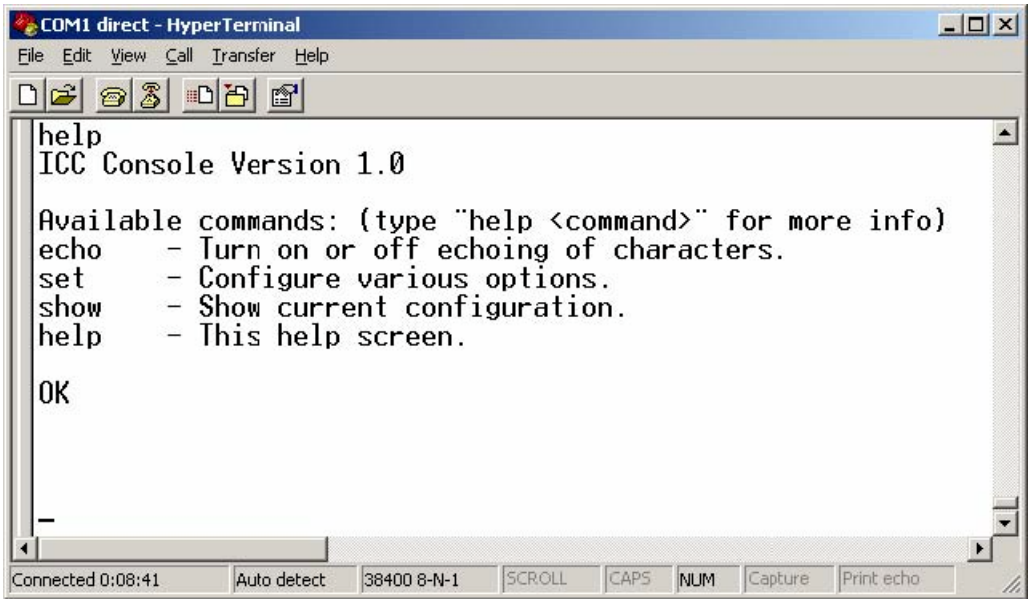
The console provides standard access and configuration methods for the various network parameters and

application configuration parameters supported by the eConnect. The number and type of supported console commands may vary with different console version and application version firmware. This section will present an overview of the currently supported console commands.

It is important to note that unless otherwise indicated, each of these commands will become effective immediately after it has been successfully entered. Also note that the console commands are not case-sensitive.

Help: This command shows the console version and an overview of all available commands. As indicated in the returned help information, typing "Help <command>" with a specific command will return help information specific to that command. Refer to Figure 3-5 for a "Help" display via HyperTerminal with an RS232 connection.

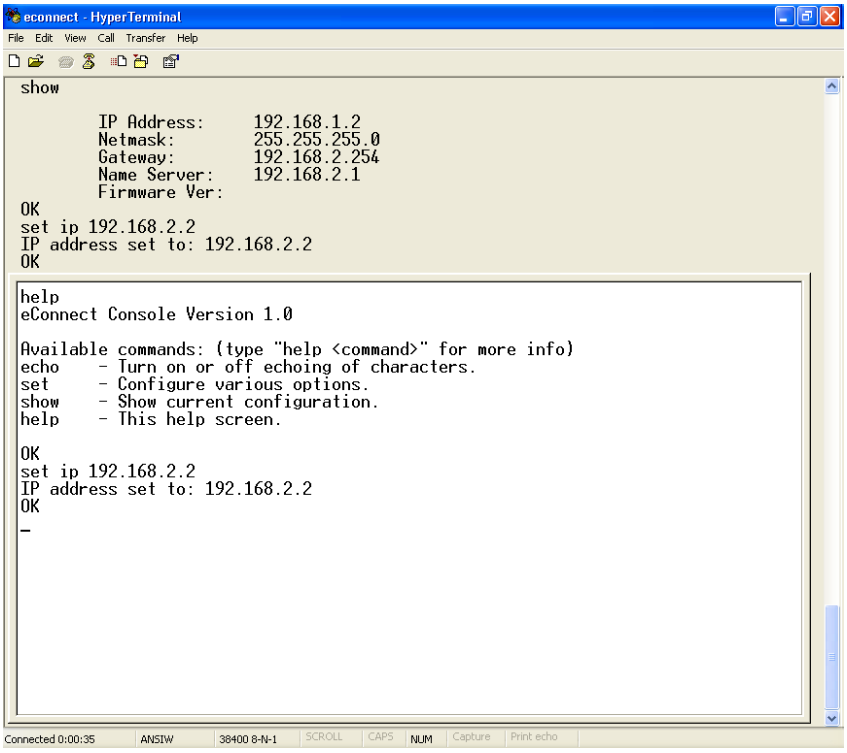
Figure 3-5: "Help" Command Via Hyper-Terminal



Echo: "Echo ON" (default setting) will echo typed characters back to the user. "Echo OFF" will disable the echoing of typed characters.

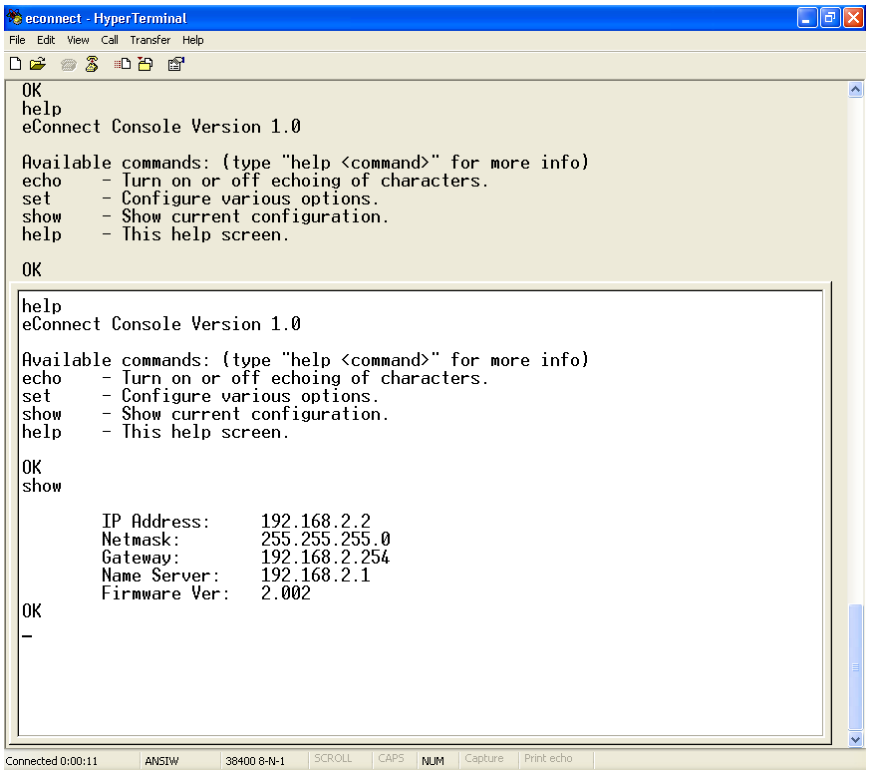
Set: The "Set" command actually encompasses several subcommands, each of which allows setting a different configuration parameter. To set a parameter, two arguments are required: the parameter's name and the value to set it to. Figure 3-6 shows how to access the set command help, which displays the syntax for setting a new IP, net mask, or gateway address.

Figure 3-6: "Set" Command Overview And Implementation



Show: This command displays current configuration information. Some of this information (IP Address, Net mask, and Gateway) is configurable via the “set” command. The “I/O Parameter” field lists the current console’s primary communication parameter. Refer to Figure 3-7.

Figure 3-7: "Show" Command Overview


econnect - HyperTerminal
File Edit View Call Transfer Help
OK
help
eConnect Console Version 1.0
Available commands: (type "help <command>" for more info)
echo - Turn on or off echoing of characters.
set - Configure various options.
show - Show current configuration.
help - This help screen.
OK
help
eConnect Console Version 1.0
Available commands: (type "help <command>" for more info)
echo - Turn on or off echoing of characters.
set - Configure various options.
show - Show current configuration.
help - This help screen.
OK
show
IP Address: 192.168.2.2
Netmask: 255.255.255.0
Gateway: 192.168.2.254
Name Server: 192.168.2.1
Firmware Ver: 2.002
OK
Connected 0:00:11 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

3.1.2.1 HYPERTERMINAL USAGE PROCEDURE

1) Make sure that the COM1 configuration procedure had been completed.
2) HyperTerminal window should be open and cursor blinking in upper left-hand corner with "ICC Console Version 1.0" being displayed.
3) Type in "Help" and press the enter key. Window should display available commands for the application. (see Figure 3-5).
4) Type in "show" and press the enter key. This function will display the current configuration for the following parameters (see Figure 3-7):

- IP address
- Net Mask
- Default Gateway
- Name Server

5) Make sure that the data in each parameter shown matches the listing in *Section 3.0*. If not, do the following:
6) Type in "set", space, the parameter you want to change, space and the value you want to change to. Press the enter key to save. An example is below:

Set IP 192.168.2.2

To configure any parameter in the HyperTerminal Application, always use the "set" function (see Figure 3-6), followed by a space, than the parameter you want to change, followed by a space, and end with the value you need.

7) Check the data to ensure it was saved. Type in "show" and press the enter key. All the parameter information should be displayed and match what you entered. If not, repeat the procedure listed above.
8) Once all the parameters have been configured to match the default values listed in *Section 3.0*, you can close the HyperTerminal Application.

NOTE

If user can not get these parameters configured or has other technical issues, please contact Sullair Corporation at the numbers listed on the back cover of this manual.

3.1.3 ETHERNET CONNECTION - CABLE CONFIGURATION

A Standard Ethernet cable or CAT 5 Cable is required to connect the eConnect to the customer's Local Area Network (LAN). (See Figure 3-8) The pin configuration is as follows:

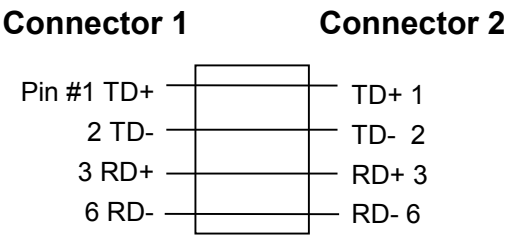
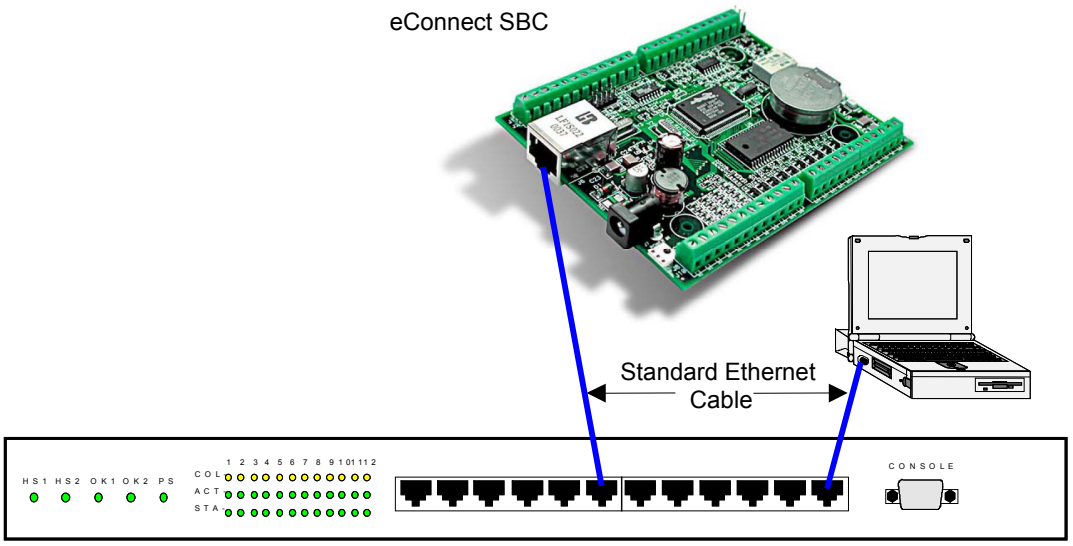
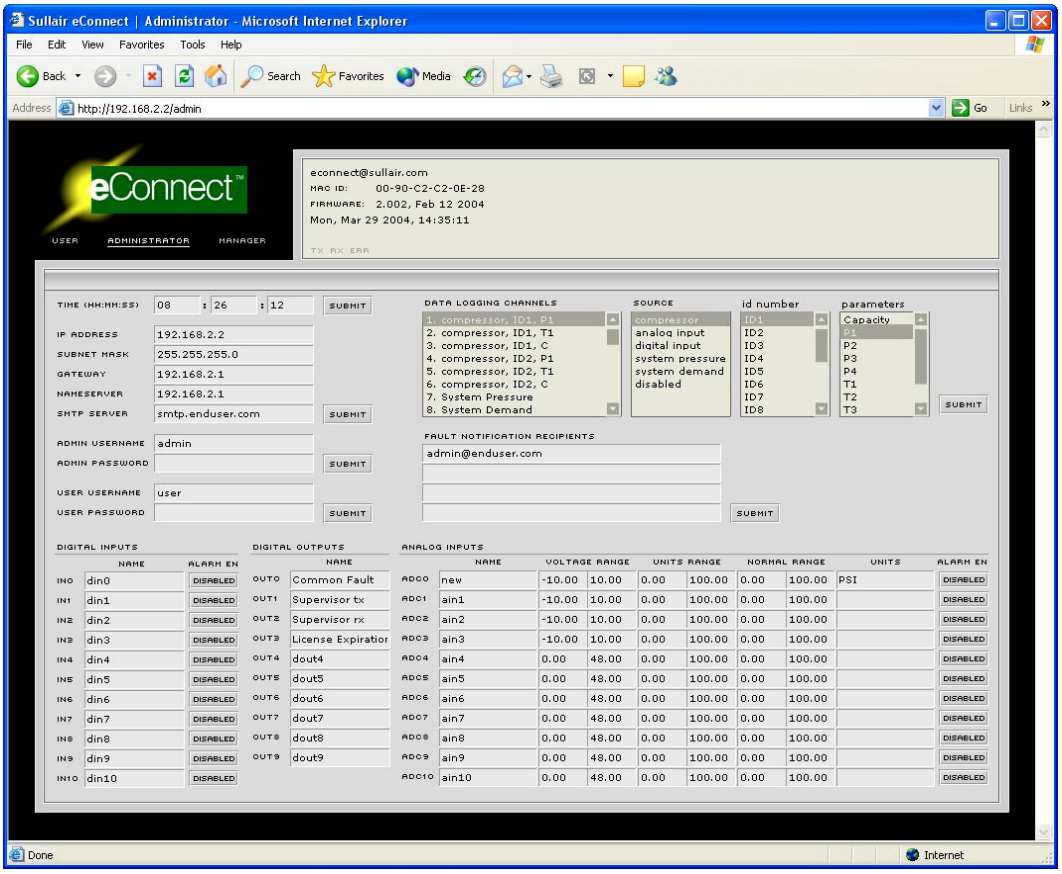


Figure 3-8 Connecting Econnect SBC to Customer Area Network (LAN)



3.2 ADMINISTRATOR PAGE

Figure 3-9: Administrator Page



3.2.1 To access the eConnect on the Local Area Network, open your Internet browser and type the IP address into the address field (i.e., http://192.168.2.2).

3.2.2 At the opening page, select the ADMINISTRATOR button and enter the User name and password (the default username from the factory is “admin” and the default password is blank).

3.2.3 Verify that the time of day is correct for the installed location. If not, highlight the appropriate two-digit value (HH, MM or SS) and retype in the correct value. The time is in Military (24-hour) format. The change is not accepted until the “submit” button next to the Time boxes is clicked.

3.2.4 The IP Address, Net Mask, Gateway, and Nameserver were set during the initial setup and should not need to be changed. Refer to the configuration *Section 3.0* to make changes to these settings.

3.2.5 The eConnect can send fault notification emails, as well as daily emails with data used to automatically generate periodic system summary reports. An SMTP server is required to send these emails. Enter the server address or domain name and click the “submit” button next to the SMTP Server box.

3.2.6 A unique username and password should be established by the Administrator to prevent unauthorized personnel from making configuration and control changes.

Enter the new Administrator username and password and click the “SUBMIT” button next to the Administrator information boxes.

3.2.7 The Administrator can change the User username and password to limit those who have read access to the eConnect. Enter the new User username and password and click the “submit” button next to the User information boxes.

3.2.8 The Administrator can select parameters to log on up to 30 data channels. The eConnect will keep the logged data for 7 days before overwriting the oldest file (see the General section for a more detailed description of the datalogging feature). Some datalogging channels may be reserved for information required to generate the automatic summary reports.

3.2.8.1 To assign a parameter to an available data logging channel, select the desire channel in the “Data Logging Channels” menu (as a default each available channel logs compressor ID1 capacity).

3.2.8.2 Once the channel is selected, select the source. The available sources are the compressors being monitored, analog inputs, digital inputs, system pressure as reported by the compressor network (highest of the compressor discharge pressures) and system demand (sum of the compressor capacities) as reported by the compressor network.

3.2.8.3 If “compressor” is selected as the source, a compressor ID number and parameter must be selected. If “analog input” is selected as the source, an analog input number must be selected. If “digital input” is selected as the source, a digital input number must be selected. No additional selections are required for “system pressure” or “system demand” sources.

3.2.8.4 Click on the “SUBMIT” button next to the data logging channel setup area on the screen to submit the change. The data logging channel menu will show the change once accepted.

3.2.9 When the eConnect detects a fault from the compressors or limits set for the additional I/O it will send its fault log to up to four email addresses. Type in the full email address of the fault notification recipients and click on the "SUBMIT" button next to the available address boxes.

3.2.10 The eConnect can monitor up to 11 digital inputs (IN0 – IN10). These inputs allow you to monitor devices outside of the monitored compressors such as filter differential switches, equipment fault contacts, etc. To name these inputs, highlight the default name (din0 – din10) for the desired channel and type the new name (limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black. To enable the alarm function for a digital input, click on the "ALARM EN" button to change it from "DISABLED" to "ENABLED". If enabled, a high (5V) input will trigger an alarm condition.

3.2.11 The eConnect has up to 10 digital outputs (OUT0-OUT9). The first four digital outputs are reserved by the eConnect. The remaining outputs are available to be used as remote actuated dry contact relays. To name these outputs, highlight the default name (dout4 – dout9) for the desired channel and type the new name (limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black.

3.2.12 The eConnect can monitor up to 11 analog inputs (ADC0 – ADC10). These inputs allow you to monitor devices outside of the monitored compressors such as flow, pressure, dew point, etc.

3.2.12.1 To name these inputs, highlight the default name (ain0 – ain10) for the desired channel and type the new name (limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black. For isolation amplifier configuration, refer to *Section 2.5*.

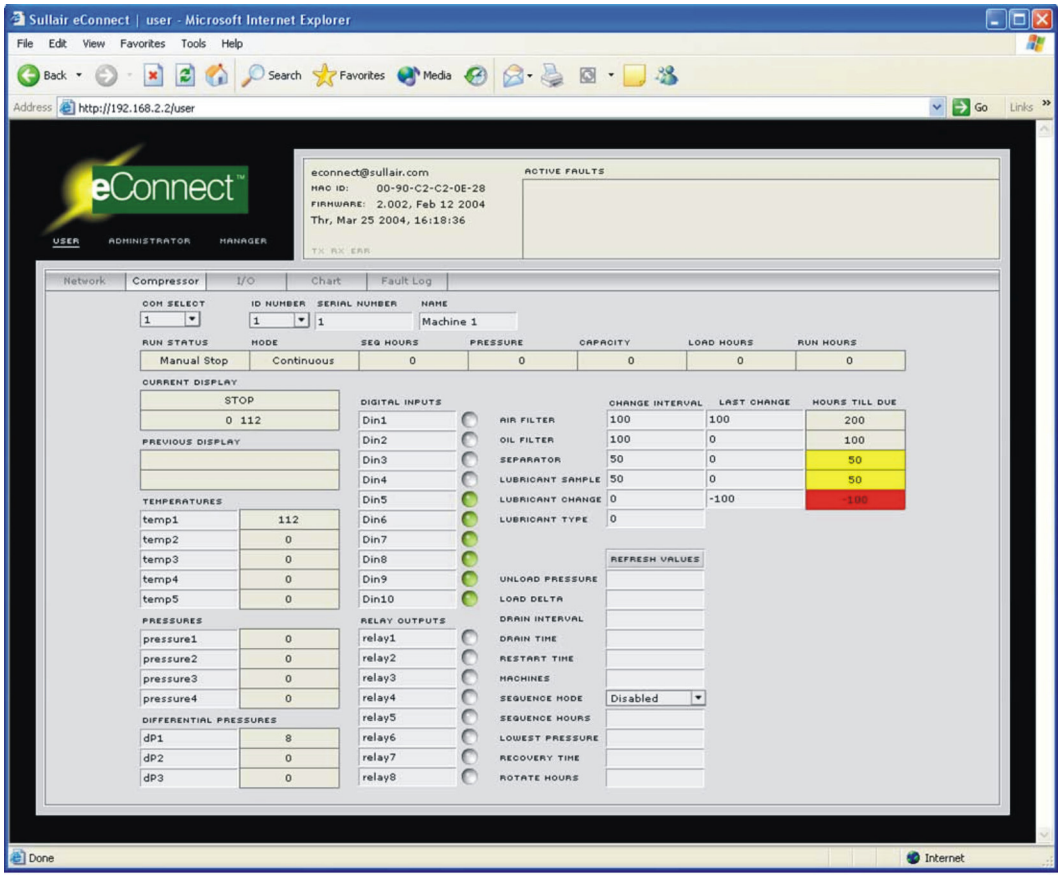
3.2.12.2 The VOLTAGE RANGE is used to define the voltage that the input into the SBC is expected to be within. The boundary range for ADC0-ADC3 is –10.00V to 10.00V. The boundary range for ADC4-ADC10 is 0.00V to 49.00V. The eConnect is supplied with isolation amplifiers for the available analog inputs (based upon the model ordered). These isolation amplifiers are field selectable for mV, mA or V input. The isolation amplifiers will be configured from the factory with a 0-10V output into the SBC, so the VOLTAGE RANGE should be set to 0.00 to 10.00 for all available analog input channels. To change the VOLTAGE RANGE values highlight the current values and type the new value. The new value will appear red. When you hit "enter" to accept, the value will turn black.

3.2.12.3 The UNIT RANGE is used to define the parameter range that corresponds to the voltage range (i.e. 0-200 psig, 0-12,000 CFM, etc.). To change the UNIT RANGE values highlight the current values and type the new value. The new value will appear red. When you hit "enter" to accept, the value will turn black.

3.2.12.4 The NORMAL RANGE is used to define the range that the parameter input is expected to be within. If the alarm is enabled, a value outside this range will cause the eConnect to trigger an alarm condition. To change the NORMAL RANGE values highlight the current values and type the new value. The new value will appear red. When you hit "enter" to accept, the value will turn black.

3.2.12.5 To enable the alarm function for an available analog input, click on the "ALARM EN" button to change it from "DISABLED" to "ENABLED". If enabled, a value outside the normal range will trigger an alarm condition.

Figure 3-10: Compressor Status Page



3.3 USER SCREENS

3.3.1 To go to the USER screens, click on "USER" below the eConnect logo. The first screen in the user realm will be the "Network" screen. Five tabs are shown toward the top of the screen. Administrator setup is required only on the Compressor tab. To enter the Compressor tab, click on the "Compressor" button (see Figure 3-10).

3.3.2 There is a status screen for each available compressor being monitored by the eConnect. Use the COM SELECT drop down menu to select the compressor currently being viewed.

NOTE

The ID number must be set first before the serial number, compressor name, parameter names and maintenance information is entered for each compressor. For the eConnect to work properly each Sullair compressor being monitored must have a unique COM number and ID number. The COM number is set on the Supervisor II Deluxe or Supervisor Controller. See the compressor operator's manual for directions on changing this COM number.

3.3.3 Each monitored compressor must have a unique ID number that does not change for the eConnect to generate accurate summary reports. The individual compressor COM numbers may change because of compressor sequencing changes, but the ID number must be unique and must not change from the initial configuration set-up by the Administrator. The default ID number from the factory is 1. It is recommended that the ID number for each compressor be changed to the initial, unique COM number established for that compressor. To change the ID

number, select a number using the drop down menu. Once the new ID number is selected it may take up to 30 seconds for it be set. When the box background turns from gray to white, the ID number is set.

3.3.4 To change a parameter name or value on the Compressor Status screen, highlight the current text or value and type in the desired name or value (text limited to 11 characters including spaces), the new text will appear red. When you hit "enter" to accept, the text will turn black. It will take a few seconds for the change to take effect. This will allow you to customize each Compressor Status screen to fit the specific compressor configuration. Not all compressors have sensors for every parameter shown on the compressor status screen. If the sensor is not present a very large positive or negative value may appear in the parameter value box. The parameter value can be removed from the Compressor Status screen by deleting the parameter name and leaving it blank.

3.3.5 The Compressor Status screen also allows you to track the maintenance intervals for common maintenance items such as the air filter, oil filter, separator elements, lubricant samples and lubricant changes. The local eConnect Administrator can enter the recommended change interval for each of these common maintenance items. Each time maintenance is performed the current compressor run hours is entered on the Compressor Status screen. The eConnect then calculates the number of hours until the next recommended change. A warning is given when there is less than 100 hours until the change is due and when the change is past due.

NOTE

Refer to your operators and maintenance manual for recommended change intervals. Some change intervals are based upon run hours or total elapsed time, whichever comes first.

3.3.6 The eConnect Administrator can change a limited number of control parameters on the Compressor Status screen. Great caution must be taken before any control parameters are changed remotely as this may significantly impact the operation of your compressed air system.

NOTE

The Sullair eConnect is intended as a remote monitoring system ONLY. Although some control parameters can be changed remotely with proper security access, the eConnect is not to be used to start and stop compressors or otherwise interfere with the local compressor safety or control operations. Always review the condition of the compressor and surrounding area prior to clearing a fault or starting the machine.

NOTES

Section 4
DIRECT CONFIGURATION & INSTALLATION

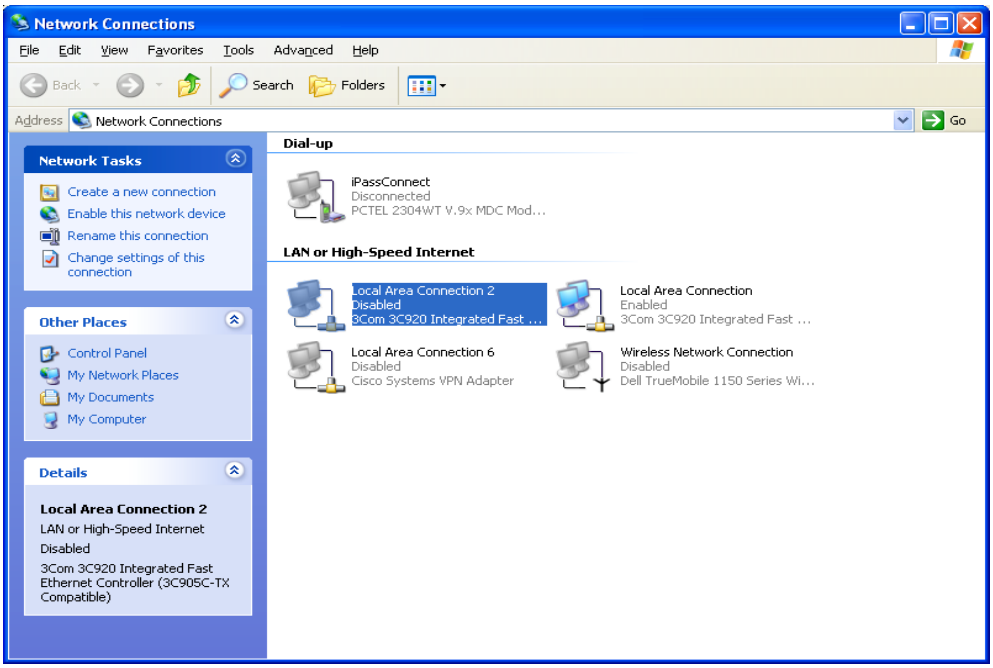
4.0 CONFIGURATION INTRODUCTION

Section 4 of this manual explains the procedure for configuring the eConnect device so that it can be connected directly to a stand alone PC or laptop. Complete this procedure to allow the PC or laptop to communicate with the eConnect device.

4.1 PC SETTINGS

Right click on ***My Network Places*** on your desktop and select ***Properties***. You will receive a screen similar to Figure 4-1.

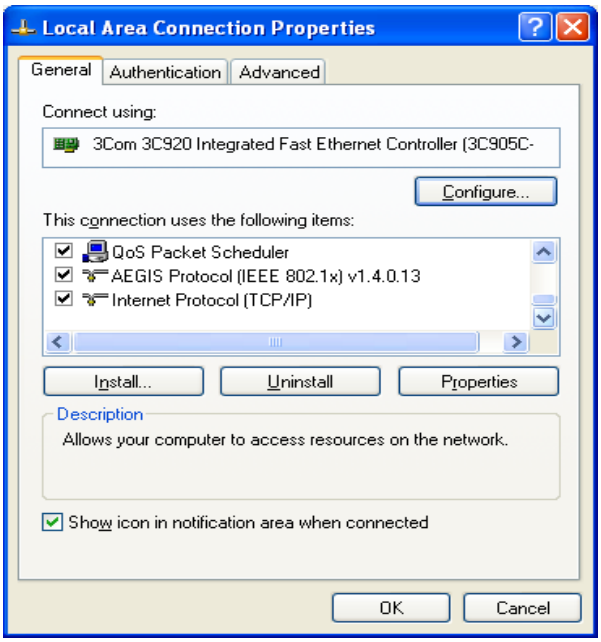
Figure 4-1



Right click on ***Local Area Connection*** and select ***Properties***. You will receive a screen like Figure 4-2.

Section 4
DIRECT CONFIGURATION & INSTALLATION

Figure 4-2

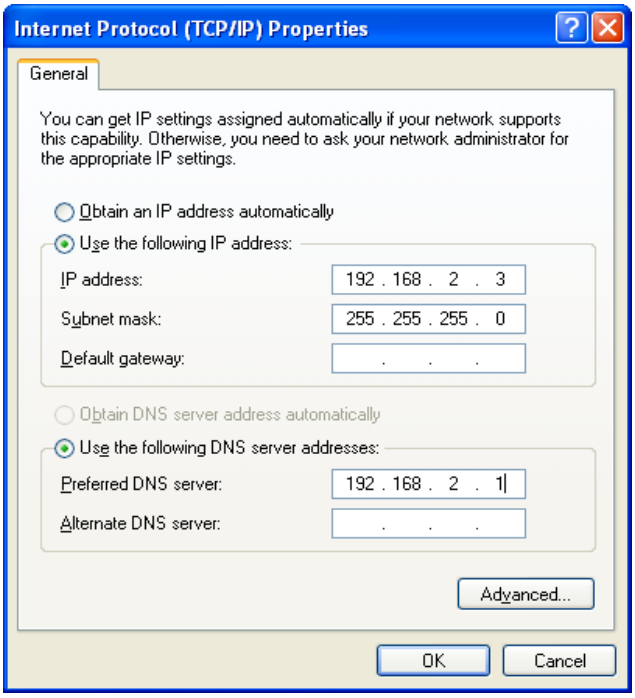


Double click Internet ***Protocol (TCP/IP).*** Input the setting as shown below in Figure 4-3.

NOTE

Keep a copy of the original settings to change back once you complete the eConnect setup.

Figure 4-3


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 2 . 3
Subnet mask: 255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 2 . 1
Alternate DNS server:
Advanced...
OK
Cancel

Select ***OK***. Close all windows. Now you can follow the web configuration instructions in *Section 5*.

NOTE

Once you complete the web interface to change the IP address to the local network at the customer site you will need to reset your IP settings to your Laptop or PC from the above settings.

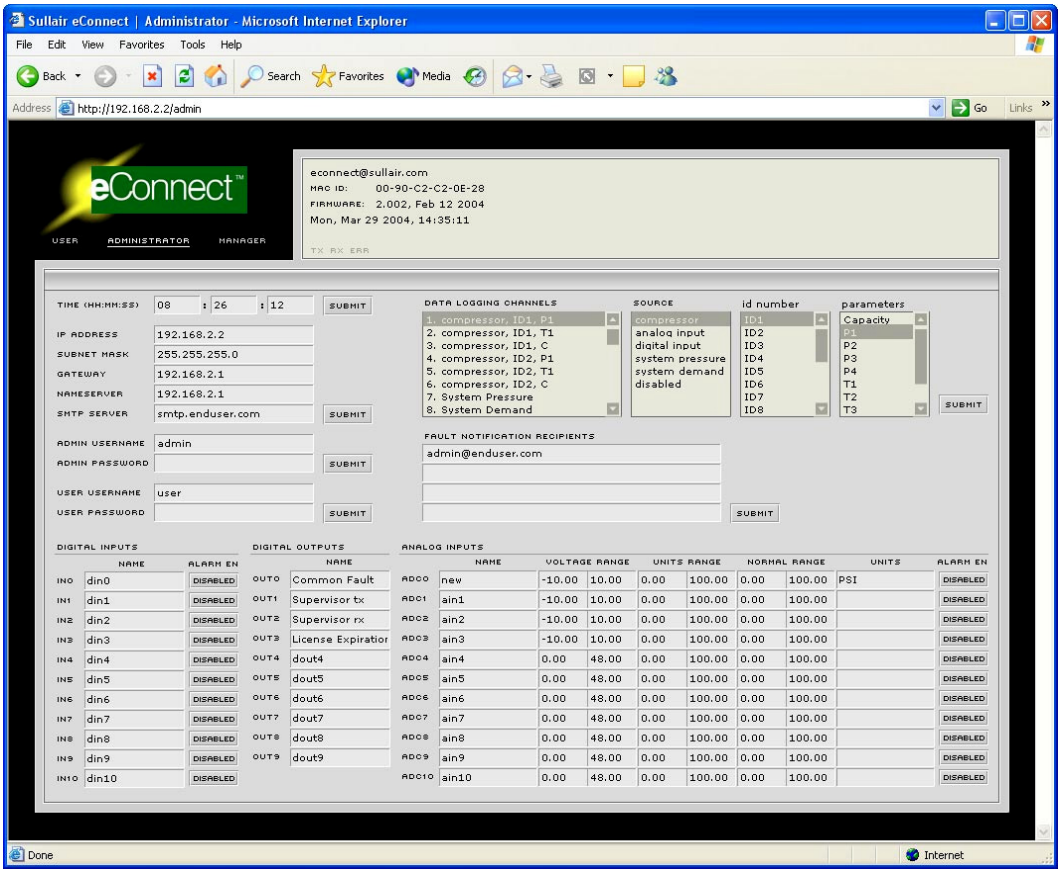
Once the eConnect has successfully been connected to the local PC, the eConnect can be set-up for the specific application. A local Administrator should be designated who will be responsible for making any eConnect configuration changes. These changes may include, data logging channel set-up, I/O input configuration, parameter naming, and control parameter changes (see *Section 5, Operation*). A unique username and password should be established by the Administrator to prevent unauthorized personnel from making configuration and control changes (see Figure 4-4).

4.1.1 ETHERNET CONNECTION - CABLE CONFIGURATION

A Crossover cable is required to connect a Laptop or PC directly to the eConnect. (See Figure 4-5) The Ethernet crossover cable pin configuration is shown in **Table 4A**:

4.2 ADMINISTRATOR PAGE

Figure 4-4: Administrator Page



Section 4
DIRECT CONFIGURATION & INSTALLATION

Table 4A: Wire Connections for Crossover Cable

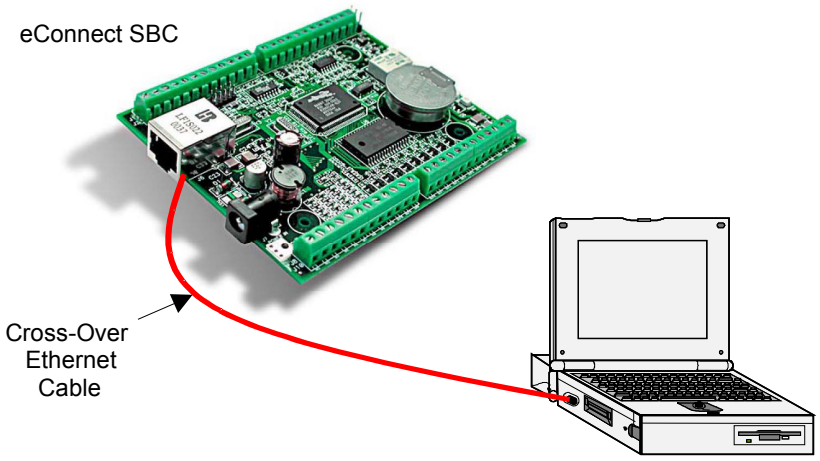
Connector 1	Connector 2
Pin #1 TD+	TD+ 1
2 TD-	TD- 2
3 RD+	RD+ 3
6 RD-	RD- 6

4.2.1 To access the eConnect on the Local Area Network, open your Internet browser and type the IP address into the address field (i.e., http://192.168.2.2).

4.2.2 At the opening page, select the ADMINISTRATOR button and enter the User name and password (the default username from the factory is “admin” and the default password is blank).

4.2.3 Verify that the time of day is correct for the installed location. If not, highlight the appropriate two-digit value (HH, MM or SS) and retype in the correct value. The time is in Military (24 hour) format. The change is not accepted until the “submit” button next to the Time boxes is clicked.

Figure 4-5
Crossover Cable Connection:
PC or Laptop to eConnect



4.2.4 The IP Address, Net Mask, Gateway, and Nameserver were set during the initial setup and should not need to be changed. Refer to the configuration *Section 3.0* to make changes to these settings.

4.2.5 A unique username and password should be established by the Administrator to prevent unauthorized personnel from making configuration and control changes.

Enter the new Administrator username and password and click the “SUBMIT” button next to the Administrator information boxes.

4.2.6 The Administrator can change the User username and password to limit those who have read access to the eConnect. Enter the new User username and password and click the “submit” button next to the User information boxes.

4.2.7 The Administrator can select parameters to log on up to 30 data channels. The eConnect will keep the logged data for 7 days before overwriting the oldest file (see the General section for a more detailed description of the datalogging feature).

4.2.7.1 To assign a parameter to an available data logging channel, select the desire channel in the "Data Logging Channels" menu (as a default each available channel logs compressor ID1 capacity).

4.2.7.2 Once the channel is selected, select the source. The available sources are the compressors being monitored, analog inputs, digital inputs, system pressure as reported by the compressor network (highest of the compressor discharge pressures) and system demand (sum of the compressor capacities) as reported by the compressor network.

4.2.7.3 If "compressor" is selected as the source, a compressor ID number and parameter must be selected. If "analog input" is selected as the source, an analog input number must be selected. If "digital input" is selected as the source, a digital input number must be selected. No additional selections are required for "system pressure" or "system demand" sources.

4.2.7.4 Click on the "SUBMIT" button next to the data logging channel setup area on the screen to submit the change. The data logging channel menu will show the change once accepted.

4.2.8 The eConnect can monitor up to 11 digital inputs (IN0 – IN10). These inputs allow you to monitor devices outside of the monitored compressors such as filter differential switches, equipment fault contacts, etc. To name these inputs, highlight the default name (din0 – din10) for the desired channel and type the new name (limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black. To enable the alarm function for a digital input, click on the "ALARM EN" button to change it from "DISABLED" to "ENABLED". If enabled, a high (5V) input will trigger an alarm condition.

4.2.9 The eConnect has up to 10 digital outputs (OUT0-OUT9). The first four digital outputs are reserved by the eConnect. The remaining outputs are available to be used as remote actuated dry contact relays. To name these outputs, highlight the default name (dout4 – dout9) for the desired channel and type the new name (limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black.

4.2.10 The eConnect can monitor up to 11 analog inputs (ADC0 – ADC10). These inputs allow you to monitor devices outside of the monitored compressors such as flow, pressure, dewpoint, etc.

4.2.10.1 To name these inputs, highlight the default name (ain0 – ain10) for the desired channel and type the new name (limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black.

4.2.10.2 The VOLTAGE RANGE is used to define the voltage that the input into the SBC is expected to be within. The boundary range for ADC0-ADC3 is –10.00V to 10.00V. The boundary range for ADC4-ADC10 is 0.00V to 49.00V. The eConnect is supplied with isolation amplifiers for the available analog inputs (based upon the model ordered). These isolation amplifiers are field selectable for mV, mA or V input. The isolation amplifiers will be configured from the factory with a 0-10V output into the SBC, so the VOLTAGE RANGE should be set to 0.00 to 10.00 for all

available analog input channels. To change the VOLTAGE RANGE values highlight the current values and type the new value. The new value will appear red. When you hit "enter" to accept, the value will turn black. For isolation amplifier configuration, refer to *Section 2.5*.

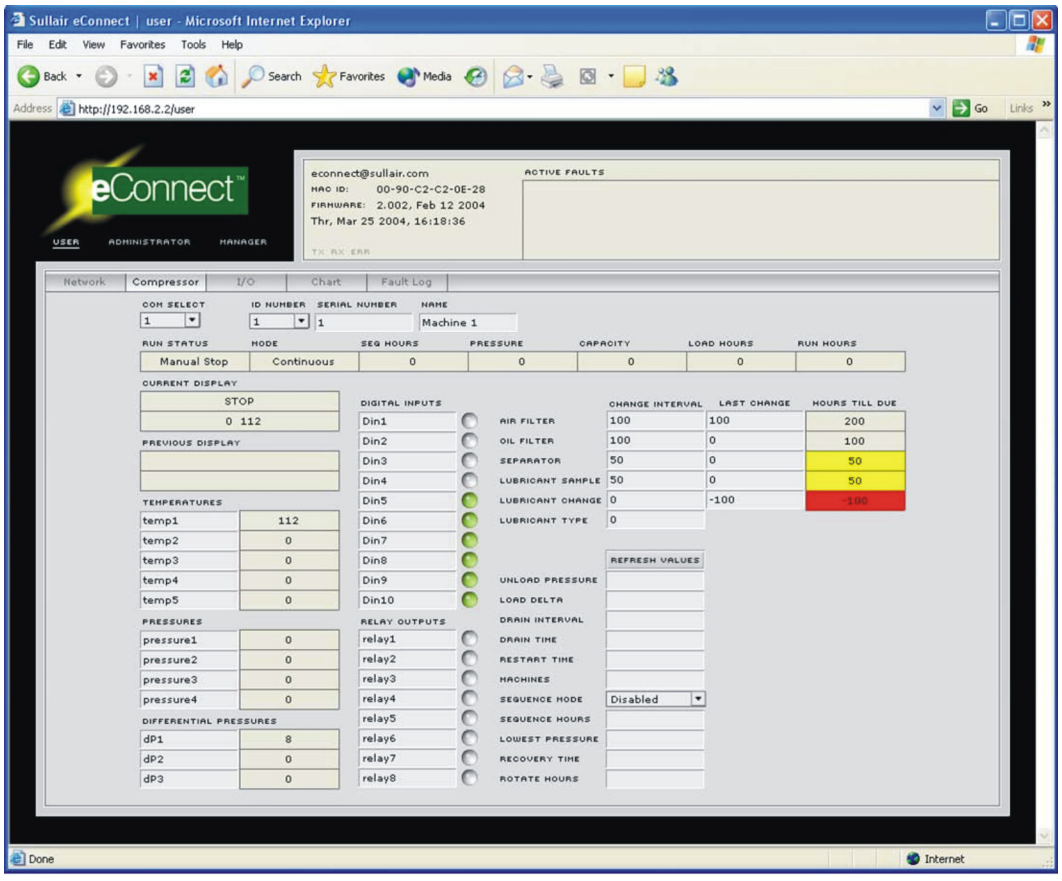
4.2.10.3 The UNIT RANGE is used to define the parameter range that corresponds to the voltage range (i.e. 0-200 psig, 0-12,000 CFM, etc.). To change the UNIT RANGE values highlight the current values and type the new value. The new value will appear red. When you hit "enter" to accept, the value will turn black.

4.2.10.4 The NORMAL RANGE is used to define the range that the parameter input is expected to be within. If the alarm is enabled, a value outside this range will cause the eConnect to trigger an alarm condition. To change the NORMAL RANGE values highlight the current values and type the new value. The new value will appear red. When you hit "enter" to accept, the value will turn black.

4.2.10.5 To enable the alarm function for an available analog input, click on the "ALARM EN" button to change it from "DISABLED" to "ENABLED". If enabled, a value outside the normal range will trigger an alarm condition.

4.3 USER SCREENS

Figure 4-6: Compressor Status Page



4.3.1 To go to the USER screens, click on "USER" below the eConnect logo. The first screen in the user realm will be the "Network" screen. Five tabs are shown toward the top of the screen. Administrator setup is required only on the Compressor tab. To enter the Compressor tab, click on the "Compressor" button (see Figure 4-6).

4.3.2 There is a status screen for each available compressor being monitored by the eConnect. Use the COM SELECT drop down menu to select the compressor currently being viewed.

NOTE

The ID number must be set first before the serial number, compressor name, parameter names and maintenance information is entered for each compressor. For the eConnect to work properly each Sullair compressor being monitored must have a unique COM number and ID number. The COM number is set on the Supervisor II Deluxe or Supervisor Controller. See the compressor operator's manual for directions on changing this COM number.

4.3.3 Each monitored compressor must have a unique ID number that does not change for the eConnect to generate accurate summary reports. The individual compressor COM numbers may change because of compressor sequencing changes, but the ID number must be unique and must not change from the initial configuration set-up by the Administrator. The default ID number from the factory is 1. It is recommended that the ID number for each compressor be changed to the initial, unique COM number established for that compressor. To change the ID number, select a number using the drop down menu. Once the new ID number is selected it may take up to 30 seconds for it be set. When the box background turns from gray to white, the ID number is set.

4.3.4 To change a parameter name or value on the Compressor Status screen, highlight the current text or value and type in the desired name or value (text limited to 11 characters including spaces). The new text will appear red. When you hit "enter" to accept, the text will turn black. It will take a few seconds for the change to take effect. This will allow you to customize each Compressor Status screen to fit the specific compressor configuration. Not all compressors have sensors for every parameter shown on the compressor status screen. If the sensor is not present a very large positive or negative value may appear in the parameter value box. The parameter value can be removed from the Compressor Status screen by deleting the parameter name and leaving it blank.

4.3.5 The Compressor Status screen also allows you to track the maintenance intervals for common maintenance items such as the air filter, oil filter, separator elements, lubricant samples and lubricant changes. The local eConnect Administrator can enter the recommended change interval for each of these common maintenance items. Each time maintenance is performed the current compressor run hours is entered on the Compressor Status screen. The eConnect then calculates the number of hours until the next recommended change. A warning is given when there is less than 100 hours until the change is due and when the change is past due.

NOTE

Refer to your operators and maintenance manual for recommended change intervals. Some change intervals are based upon run hours or total elapsed time, whichever comes first.

4.3.6 The eConnect Administrator can change a limited number of control parameters on the Compressor Status screen. Great caution must be taken before any control parameters are changed remotely as this may significantly impact the operation of your compressed air system.

Section 4
DIRECT CONFIGURATION & INSTALLATION

NOTE

The Sullair eConnect is intended as a remote monitoring system ONLY. Although some control parameters can be changed remotely with proper security access, the eConnect is not to be used to start and stop compressors or otherwise interfere with the local compressor safety or control operations. Always review the condition of the compressor and surrounding area prior to clearing a fault or starting the machine.

Section 5
OPERATION

5.0 EMBEDDED WEB SERVER INTRODUCTION

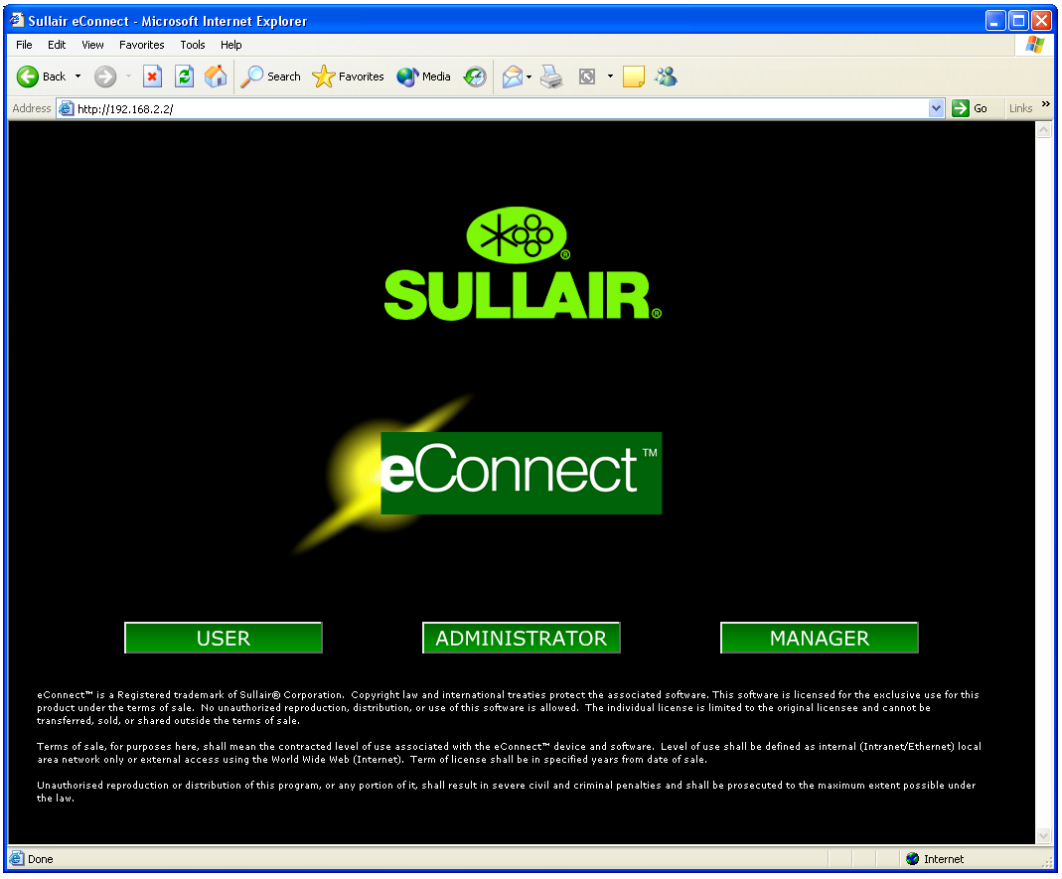
The eConnect contains an embedded web server (also known as an HTTP server), which allows users to access data in a graphical manner with web browsers such as Microsoft Internet Explorer or Netscape Navigator. In this way, the eConnect and connected Supervisors can be monitored, configured and controlled from across the room or from across the globe.

The eConnect's web pages are best viewed with:

- Microsoft Internet Explorer version 5.x and later
- Netscape Navigator version 6.x and later
- Screen resolution 1024 X 768 or larger.

To access the unit's embedded web server, enter its configured IP address into the address (URL) field of your web browser. Surfing the eConnect's web pages is the same as surfing the Internet's worldwide web. The opening page that will be displayed when the unit's IP address is entered into the URL field of your web browser is shown in Figure 5-1. Refer to *Section 3.0* and *Section 5.4* for more information about configuring the eConnect's IP address.

Figure 5-1: The Opening Web Server Page


Sullair eConnect - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://192.168.2.2/
Go Links
SULLAIR
eConnect™
USER
ADMINISTRATOR
MANAGER
eConnect™ is a Registered trademark of Sullair® Corporation. Copyright law and international treaties protect the associated software. This software is licensed for the exclusive use for this product under the terms of sale. No unauthorized reproduction, distribution, or use of this software is allowed. The individual license is limited to the original licensee and cannot be transferred, sold, or shared outside the terms of sale.
Terms of sale, for purposes here, shall mean the contracted level of use associated with the eConnect™ device and software. Level of use shall be defined as internal (Intranet/Ethernet) local area network only or external access using the World Wide Web (Internet). Term of license shall be in specified years from date of sale.
Unauthorised reproduction or distribution of this program, or any portion of it, shall result in severe civil and criminal penalties and shall be prosecuted to the maximum extent possible under the law.
Done
Internet

From the opening page, there are two realms that can be accessed: The User (*Section 5.3*) and Administrator (*Section 5.4*) realms. Each of these realms contains a different set of monitoring and configuration interfaces, and requires proper authentication (*Section 5.1*).

Section 5
OPERATION

NOTE

The manager realm is factory-accessible only.

5.1 AUTHENTICATION

Each of the two realms within the eConnect's embedded web server (User and Administrator) has a username and password associated with it. This username and password is used to authenticate for various realms.

The administrator's username and password can be used to access the Administrator and User Realms.

The user's username and password can only be used to access the User Realm.

When a realm is accessed, a browser popup box will appear requesting a username and password for a specified realm. In Figure 5-2 below, the USER realm is asking for a username and password. In this case, the user's or administrator's username and password would be accepted.

Figure 5-2: Authentication Dialog Popup Box

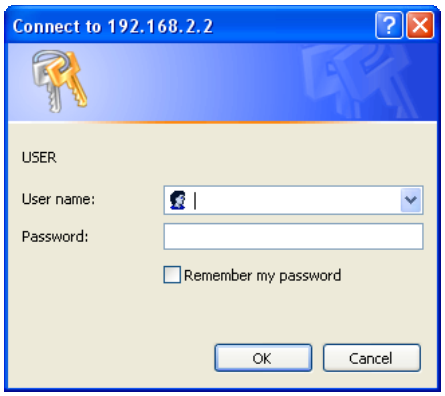


Table 3: Username and Password Default Values

The initial factory-set value for usernames and passwords are as follows:

Realm	Username	Password
User	user	(blank)
Administrator	admin	(blank)

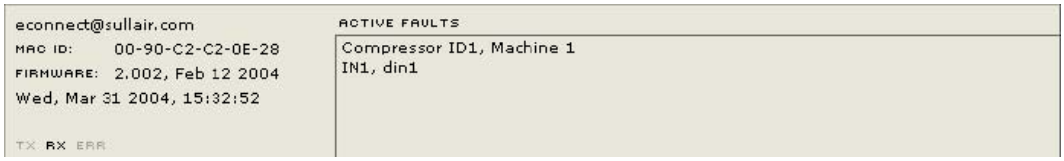
NOTICE

Usernames and passwords are case-sensitive, and that the authentication will remain in effect from that point until all browser windows are closed.

5.2 eCONNECT STATUS

At the top of each eConnect realm, there is a status bar displaying basic information about the unit. Refer to Figure 5-3 for a screen shot of the eConnect status bar.

Figure 5-3: EConnect Status Bar



- **From Address** – The configured from address is shown at the top of the status bar. This is a convenient way of identifying the current unit that is being viewed.
- **MAC Address** - The unique 48-bit Ethernet MAC ID for this device.
- **Firmware** - The current firmware version and the date it was created.
- **Date and Time** – The current date and time according to the unit's real time clock.
- **Expiration Warning** – If the software license for the eConnect is going to expire in less than 30 days, a warning is displayed below the date and time. Contact local distributor to extend license.
- **TX, RX, ERR** – These indicate that your browser is transmitting (TX), receiving (RX), or not communicating properly (ERR) with the eConnect.
- **Active Faults** – This box display a list of the currently active faults. When a fault clears, it will be cleared from this list. Active faults are displayed in the user realm only. When a fault is active, the entire screen will flash red.

5.3 USER REALM

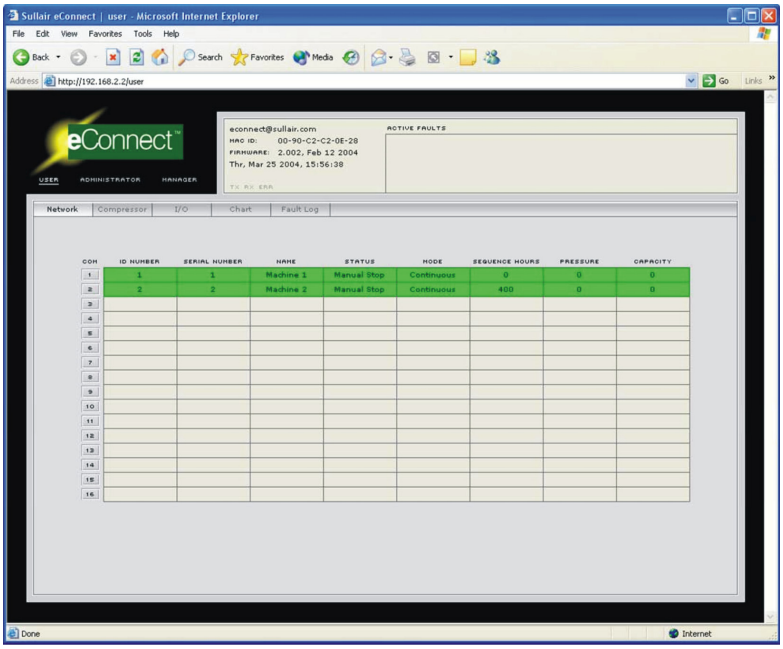
The user realm is the main monitoring section of the eConnect's web server.

The network status page is the first page entered in the user realm. "Network", "Compressor", "I/O", "Chart" and "Fault" tabs are at the top of the monitoring window. Each tab will be described in detail.

5.3.1 NETWORK STATUS

The network status page displays basic status information about the machines connected to each of the 16 communication (com) numbers on the supervisor network. A screen shot of the network status page is shown in Figure 5-4.

5-4: Network Status Page



- **ID Number** – A configuration parameter that is stored inside a compressor that is used to identify a specific machine, even when its COM number is changed.
- **Serial Number** – A user-defined number that is used to identify a machine in reports.
- **Name** – A user-defined name for the machine.
- **Status** – Possible values are "E-Stop", "Remote Stop", "Manual Stop", "Stand By", "Starting", "Load", "Unload", "Trim", and "Full Load".
- **Mode** – Possible values are "Auto" and "Continuous".
- **Seq Hours** – Number of sequence hours.
- **Pressure** – P2 (Package Discharge Pressure).
- **Capacity** – Capacity.

The color of a row indicates the fault status of the machine connected to the corresponding COM number. A red background indicates that the machine is faulted. A green background indicates that the machine is not faulted. If no machine is connected to a com number, the row will be blank.

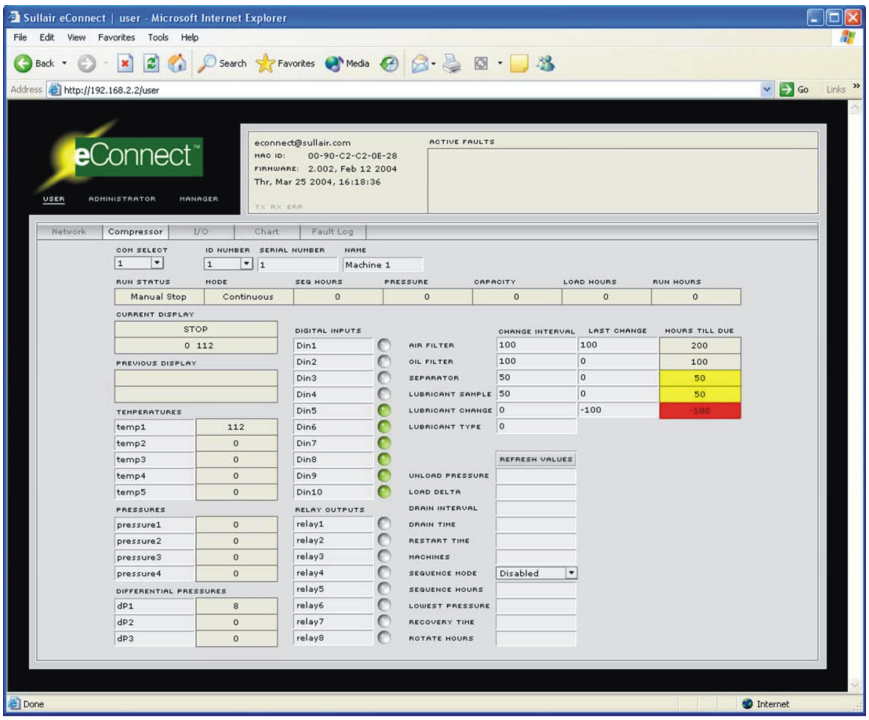
The data displayed on the network status page is generated by the supervisor network and is constantly monitored by the eConnect. However, the values displayed on the system status page provide only a data snapshot. The network status page is set up to automatically refresh its data every second, but this time may vary based on http traffic.

Clicking on a row will take you to the compressor page for the corresponding COM number.

5.3.2 COMPRESSOR STATUS

The compressor status page, entered by clicking on the "Compressor" tab or clicking on a row in the Network screen, displays detailed information about a specific machine. This page is loaded with the values of the machine that is connected to the COM number, which corresponds to the number in the com select drop-down box. A screen shot of the machine status page is shown in Figure 5-5.

Figure 5-5: Compressor Status Page



The Administrator can change legends and certain compressor parameters by selecting the desired text or number and typing over the current value. The new text or number will turn red. Press enter to submit.

- **Com Select** – The currently selected com number. Changing this value will load the compressor status page with values corresponding to the selected COM number.
- **ID Number** – The configured ID number. Changing this value will change the ID number for the machine with the currently selected COM number. This value is editable by the administrator.
- **Serial Number** – Administrator-defined serial number for the machine with this ID number.
- **Name** – Administrator-defined name for the machine with this ID number.
- **Run Status, Mode, Seq Hours, Pressure, Capacity, Load Hours, Run Hours** – Status values obtained from the machine.
- **Temperatures, Pressures, Differential Pressures** – For each of the five (5) temperatures, four (4) pressures, and three (3) differential pressures, there are two fields:
  - An administrator-defined legend for this temperature, pressure, or differential pressure. When changed, the text will turn red. Press enter to submit the value to be saved.
  - The current value for this temperature, pressure, or differential pressure.
- **Digital Inputs And Relay Outputs** – for each of the ten (10) digital inputs and eight (8) relay outputs, there are two (2) fields:
  - An administrator-defined legend for this digital input or relay output. When changed, the text will turn red. Press enter to submit the value to be saved.
  - An LED that indicates whether the digital input or relay output is on (green) or off (clear).
- **Maintenance Items** – There are five (5) maintenance items: **air filter**, **oil filter**, **separator, lubricant sample**, and **lubricant change**. Each of these maintenance items' "hours till due" is calculated with the following equation:
  - Hours till due = last change + change interval – run hours.
  - The "last change" and "change interval" are Administrator-defined. When changed, the text will turn red. Press enter to submit the value to be saved. The lubricant type is simply a text field, and is not used in calculations.
  - A yellow background in the "hours till due" field indicates < 100 hours till due. A red field indicates past due.
- **Machine Parameters** – There are 11 parameters that can be displayed on the compressor page: UNLOAD PRESSURE, LOAD DELTA, DRAIN INTERVAL, DRAIN TIME, RESTART TIME, MACHINES, SEQUENCE MODE, SEQUENCE HOURS, LOWEST PRESSURE, RECOVERY TIME, and ROTATE HOURS. Because these values are not monitored by the eConnect to conserve network bandwidth, obtaining these values requires the user to click on the "refresh values" button. Loading these values can take up to a minute. These values are editable by the administrator. When changed, the text will turn red. Press enter to submit the value to be saved.

Section 5
OPERATION

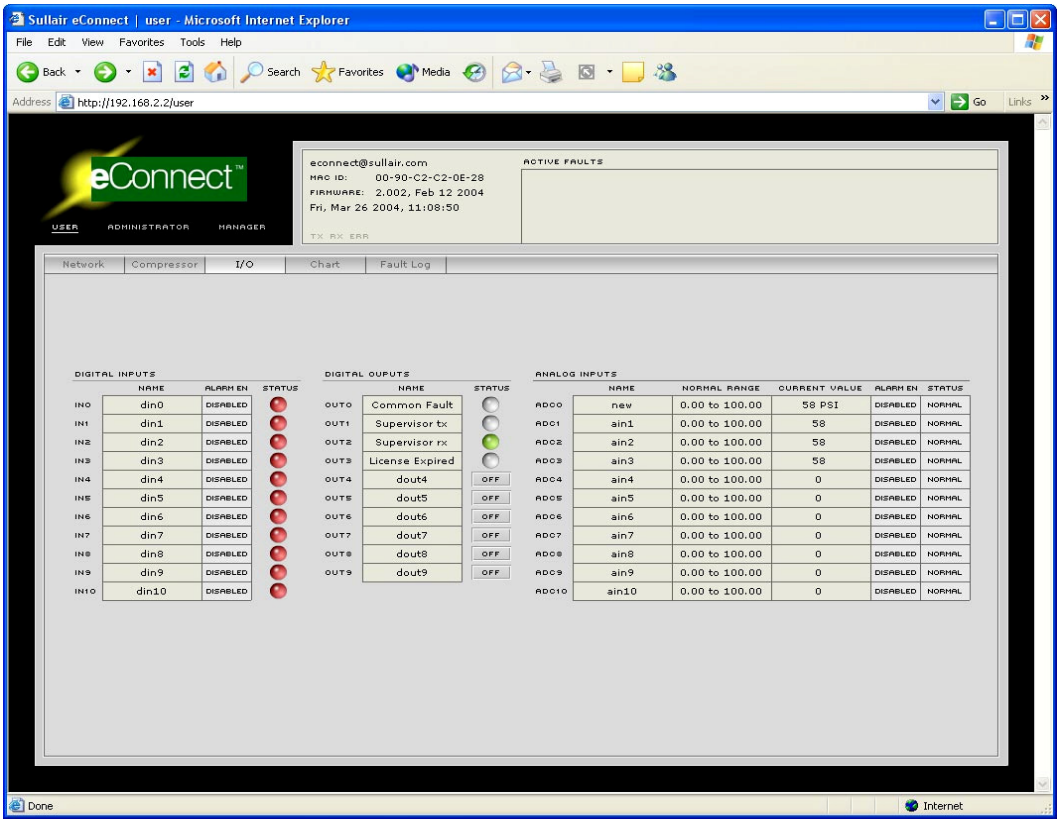
NOTICE

Each machine on the network must have its ID number properly configured via the eConnect. There should not be any duplicate ID numbers on the network. The eConnect uses a machine's ID number, which is reported by a machine, to identify a machine regardless of its COM number. Serial number, machine name, legends, and maintenance items are ID specific. In general, ID numbers should be configured one time only.

5.3.3 I/O STATUS

The I/O Status page displays the current status of the eConnect's physical I/O channels. Refer to Figure 5-6 for a screen shot of the I/O Status page:

Figure 5-6: I/O Status Page



- **Digital Inputs** – The eConnect has eleven (11) digital inputs, IN0-IN10. For each input:
  - Name – Administrator-defined name for the input (name defined in Administrator screen).
  - Alarm En – Indicates whether the input's alarm feature is enabled or disabled. If enabled, a high (5V) input will trigger an alarm condition.
  - Status - The current values of the digital input. Red = high (5V), clear = low (0V).
- **Digital Outputs** – The eConnect has ten (10) digital outputs, OUT0-OUT9. OUT0-OUT3 are reserved by the eConnect. OUT0 indicates the common fault status of the eConnect. OUT1 and OUT2 indicate the eConnect's transmit and receive status for serial communications on the supervisor network. OUT3 indicates whether the eConnect's license is expired or not. For OUT4-OUT9:
  - Names – Administrator-defined name for the output (name defined in Administrator screen).

- Values – The current values of the output. On = 5V, Off = 0V.

- **Analog Inputs** – The eConnect has eleven (11) analog inputs, ADC0-ADC10. For each input:
  - Name – Administrator-defined name for the input (name defined in Administrator screen).
  - Normal Range – Administrator-defined range that defines the normal range that the input is expected to be within (range defined in Administrator screen).
  - Current Value – Calculated using the following equation:

    `ulow + ( ((v – vlow)/(vhigh - vlow)) * (uhigh – ulow) )`

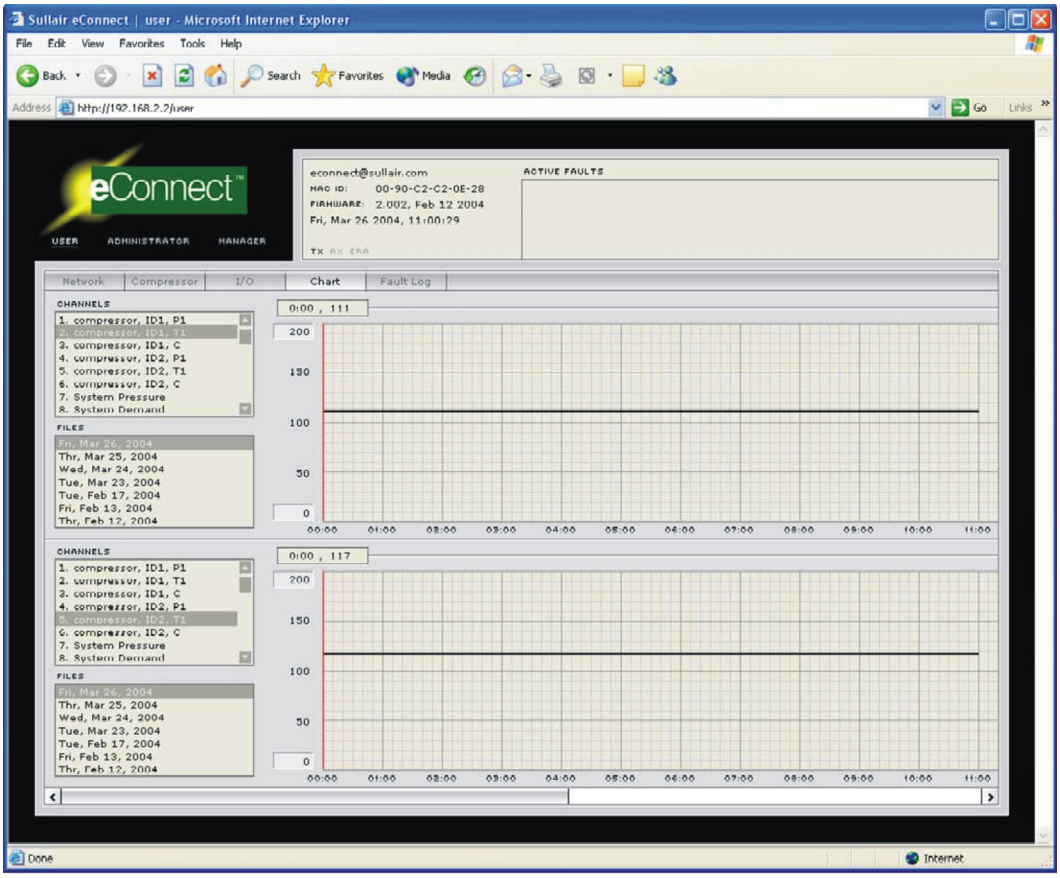
    `ulow/uhigh:` administrator-defined units low and high values (defined in Administrator screen).
    `vlow/vhigh:` administrator-defined voltage high and low values (defined in Administrator screen).
    `v:` the current voltage on the channel.
  - Alarm En – Indicates whether the input's alarm feature is enabled or disabled. If enabled, an input that is outside of the normal range will trigger an alarm condition.

- For more information about configuring the eConnect's I/O features, refer to *Section 5.4*.

5.3.4 CHANNEL CHART

The chart page displays channel data in a graphical format. A screen shot is shown in Figure 5-7.

Figure 5-7: Channel Chart



- **Channels** – Use this box to select a channel (1-30) to view. After clicking on a channel number, the

available dates for that channel are shown in the “files” box. The saved y-axis range is also loaded.

- **Files** – Use this box to select a specific date to be displayed in the chart.
- **Chart Axis** –- The x-axis of both charts is in units of time. Each hash mark represents a ten-minute interval. The scale of the y-axis is configurable. Its current maximum and minimum value for each chart is displayed in the text box next to the y-axis.
- **Date Select** – This drop down box allows the user to select from any of the seven files (listed by date) to be displayed. If a file is empty, “Empty” will be displayed instead of a date.
- **Y-Axis Maximum Value** – The y-axis of both graphs can be scaled by changing its maximum value. When changed, the text will turn red. Press enter to submit the value to be saved. Pressing enter will also re-scale the y-axis.
- **Slider** – Both charts contain a vertical red line and a sliding box that displays the x, y value for the position that it is dragged to.

5.3.5 CHANNEL DATA

The channel data can be accessed in a numerical format for viewing or importing into programs such as Microsoft Excel. To access a channel’s numerical data, enter the following URL into the address bar of your web browser:

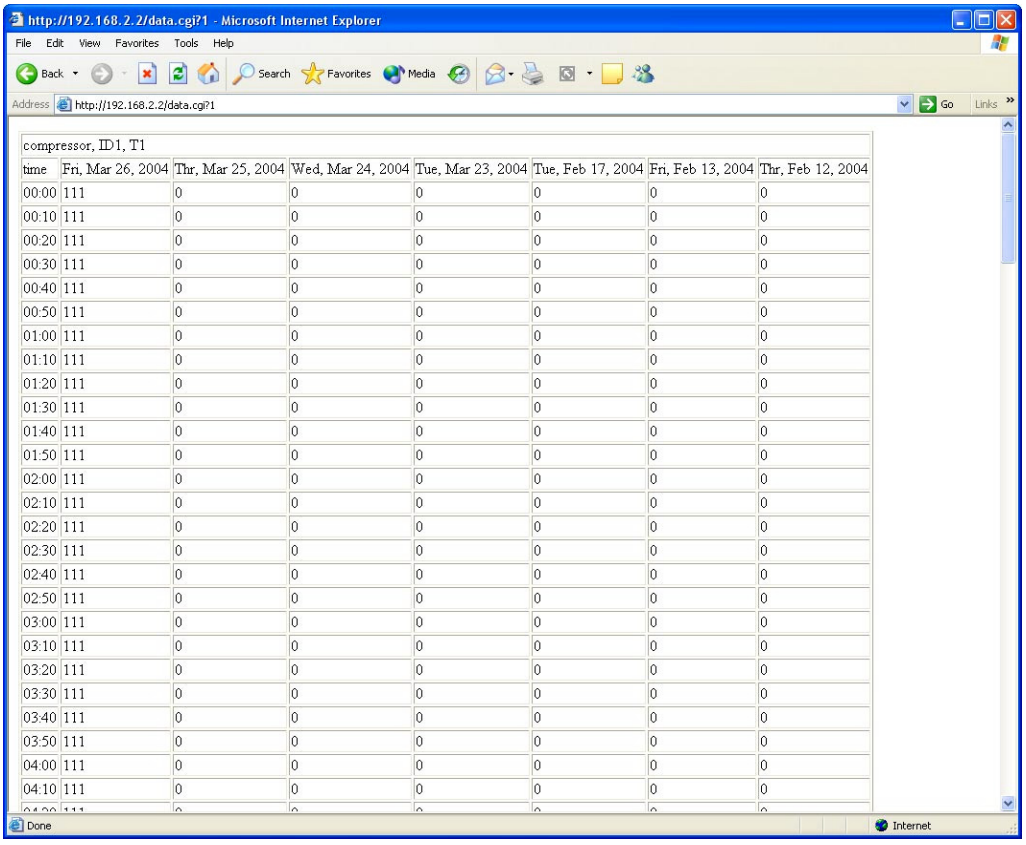
`http://<my ip address>/data.cgi?<channel number - 1>`

For example, to access channel 2 on ip address 192.168.2.2, enter:

`http://192.168.2.2/data.cgi?1`

A screen shot of a channel data page is shown in Figure 5-8:

Figure 5-8: Channel Data Page



compressor, ID1, T1

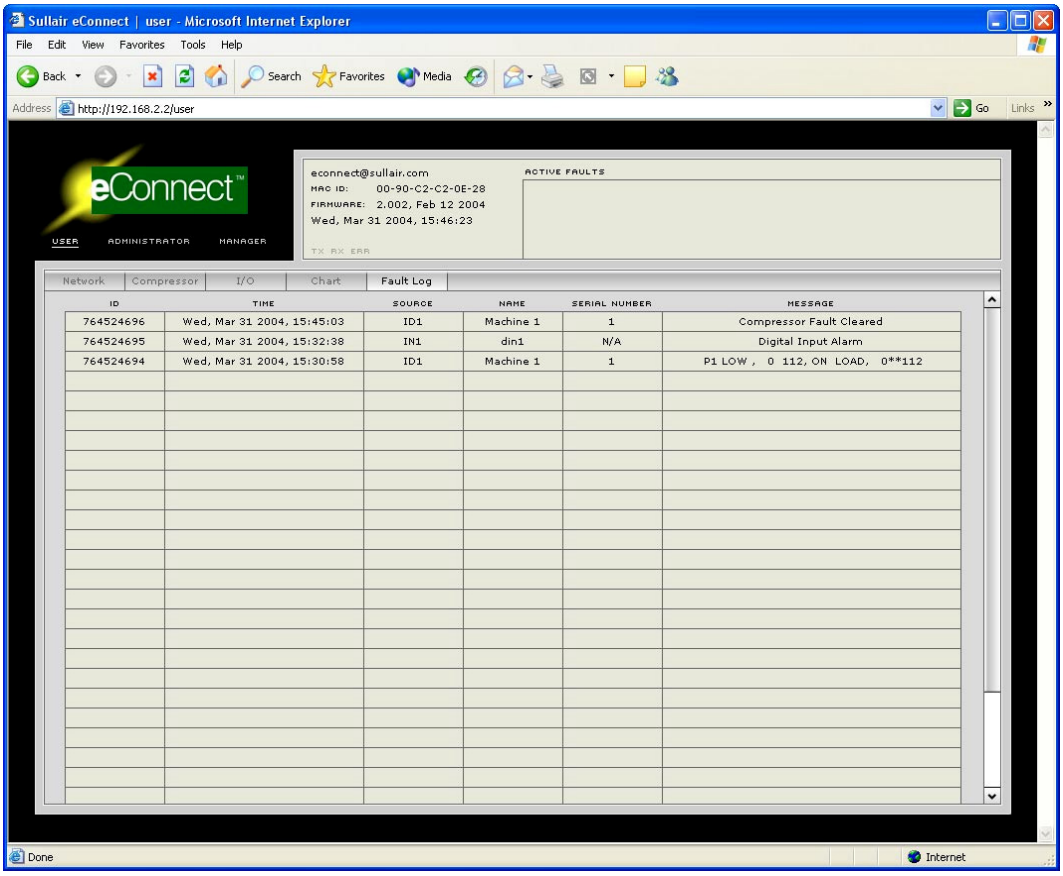
time	Fri, Mar 26, 2004	Thr, Mar 25, 2004	Wed, Mar 24, 2004	Tue, Mar 23, 2004	Tue, Feb 17, 2004	Fri, Feb 13, 2004	Thr, Feb 12, 2004
00:00	111	0	0	0	0	0	0
00:10	111	0	0	0	0	0	0
00:20	111	0	0	0	0	0	0
00:30	111	0	0	0	0	0	0
00:40	111	0	0	0	0	0	0
00:50	111	0	0	0	0	0	0
01:00	111	0	0	0	0	0	0
01:10	111	0	0	0	0	0	0
01:20	111	0	0	0	0	0	0
01:30	111	0	0	0	0	0	0
01:40	111	0	0	0	0	0	0
01:50	111	0	0	0	0	0	0
02:00	111	0	0	0	0	0	0
02:10	111	0	0	0	0	0	0
02:20	111	0	0	0	0	0	0
02:30	111	0	0	0	0	0	0
02:40	111	0	0	0	0	0	0
02:50	111	0	0	0	0	0	0
03:00	111	0	0	0	0	0	0
03:10	111	0	0	0	0	0	0
03:20	111	0	0	0	0	0	0
03:30	111	0	0	0	0	0	0
03:40	111	0	0	0	0	0	0
03:50	111	0	0	0	0	0	0
04:00	111	0	0	0	0	0	0
04:10	111	0	0	0	0	0	0

The source of the data is displayed at the top of the table. The time for each data point is shown on the left side of the table in 10-minute increments. The date for each of the seven files is displayed in the second row of the table.

5.3.6 FAULT LOG

The fault log page displays the last 30 fault events that the eConnect has recorded. A screen shot of the fault log page is shown in Figure 5-9.

Figure 5-9: Fault Log Page


Sullair eConnect | user - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://192.168.2.2/user
Go Links
eConnect
USER ADMINISTRATOR MANAGER
econnect@sullair.com
MAC ID: 00-90-C2-C2-0E-28
FIRMWARE: 2.002, Feb 12 2004
Wed, Mar 31 2004, 15:46:23
ACTIVE FAULTS
Network Compressor I/O Chart Fault Log
ID TIME SOURCE NAME SERIAL NUMBER MESSAGE
764524696 Wed, Mar 31 2004, 15:45:03 ID1 Machine 1 1 Compressor Fault Cleared
764524695 Wed, Mar 31 2004, 15:32:38 IN1 din1 N/A Digital Input Alarm
764524694 Wed, Mar 31 2004, 15:30:58 ID1 Machine 1 1 P1 LOW , 0 112, ON LOAD, 0**112
Done
Internet

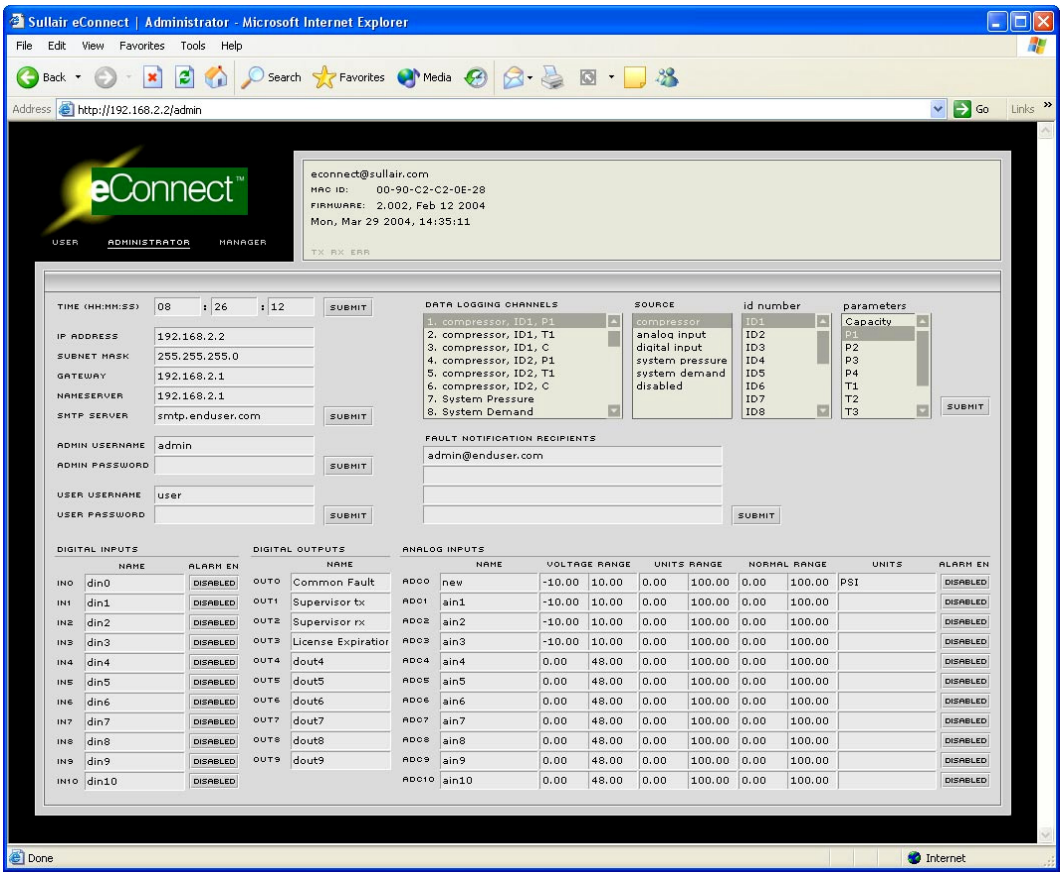
- **ID** – Each fault event has a unique ID number associated with it.
- **Time** – The time and date of the event.
- **Source** –- The source of the fault event. Possible values are ID1-ID16 (compressors), DIN0-DIN10 (digital inputs), ADC0-ADC10 (analog inputs).
- **Name** – The configured name of the source (Machine name, DIN name, ADC name).
- **Serial Number** – If the source of the fault event was from a compressor, its serial number will appear here.
- **Message** – A short message explaining the event. In the case of compressor's, this will echo the last two display messages from the compressor.

5.4 ADMINISTRATOR REALM

The administrator page is used to configure time, network settings, authentication settings, channel settings, fault notification settings, and I/O settings. Refer to Figure 5-10 for a screen shot of the administrator page.

Section 5
OPERATION

Figure 5-10: Administrator Page

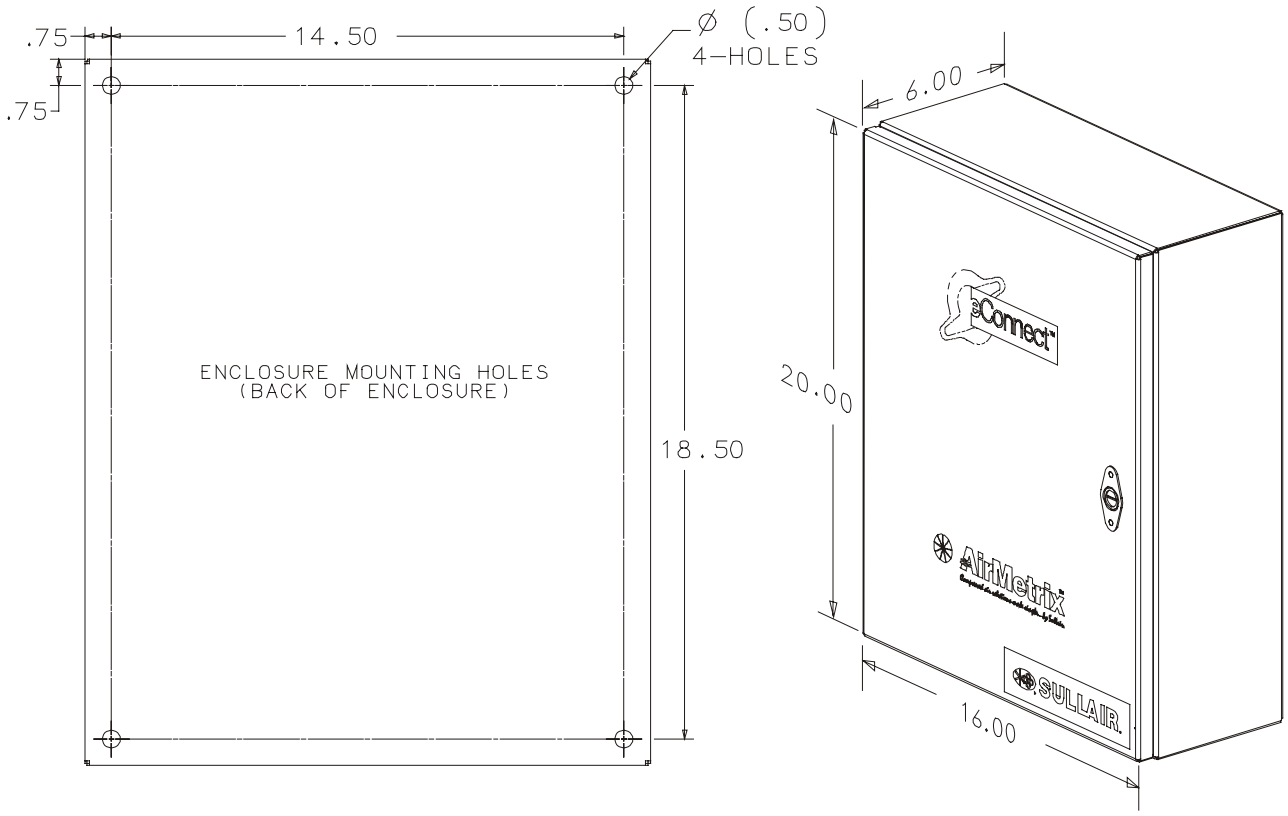


- **Time** - Used to change the time to the desired value. The time is represented as HH:MM:SS, and is in Military (24 hour) format.
- **IP Address, Subnet Mask, Gateway, Name server, SMTP Server** – Used to change the network settings of the eConnect. These addresses can be dotted addresses or domain names, provided a valid name server is provided.
- **Admin Username & Password** – Change the username and password for the administrator realm.
- **User Username & Password** – Change the username and password for the user realm.
- **Data Logging Channels** – Use this interface to configure the source of the data that each of the 30 channels is logging. Note that some channels may be reserved by the manager, and may not be configurable by the administrator. In this case, that specific channel will not appear in the list.
- **Fault Notification Recipients** – Use this list to enter up to four email address that the eConnect will send fault notifications to whenever a fault condition occurs.
- **Digital Inputs** – The eConnect has 11 digital inputs, IN0-IN10. For each input:
- Name – Used to define a name for the input.
- Alarm En – Indicates whether the input's alarm feature is enabled or disabled. If enabled, a high (5V) input will trigger an alarm condition.
- **Digital Outputs** – The eConnect has 10 digital outputs, OUT0-OUT9. OUT0-OUT3 are reserved by the eConnect. OUT0 indicates the common fault status of the eConnect. OUT1 and OUT2 indicate the eConnect's transmit and receive status for serial communications on the supervisor network. OUT3 indicates whether the eConnect's license is expired or not. For OUT4-OUT9:

- Names – Used to define a name for the output.
- **Analog Inputs** – The eConnect has 11 analog inputs, ADC0-ADC10. For each input:
- Name – Used to define a name for the input.
- Voltage Range – Used to define the voltage range that the input is expected to be within. The boundary range for ADC0-ADC3 is -10.00V to 10.00V. The boundary range for ADC4 - ADC10 is 0.00V to 49.00V.
- Units Range – Used to define the unit's range that corresponds to the voltage range. The following equation is used to calculate the current value of the input, in units:
- **`ulow + ( ((v – vlow)/(vhigh - vlow)) * (uhigh – ulow) )`**
- `ulow/uhigh:` units low and high values
  `vlow/vhigh:` voltage high and low values
  `v:` the current voltage on the channel.
- Normal Range – Used to define the normal range that the input is expected to be within, in calculated units.
- Units – Used to define the units of the calculated current value.
- Alarm En – Indicates whether the input's alarm feature is enabled or disabled. If enabled, an input that is outside of the normal range will trigger an alarm condition.

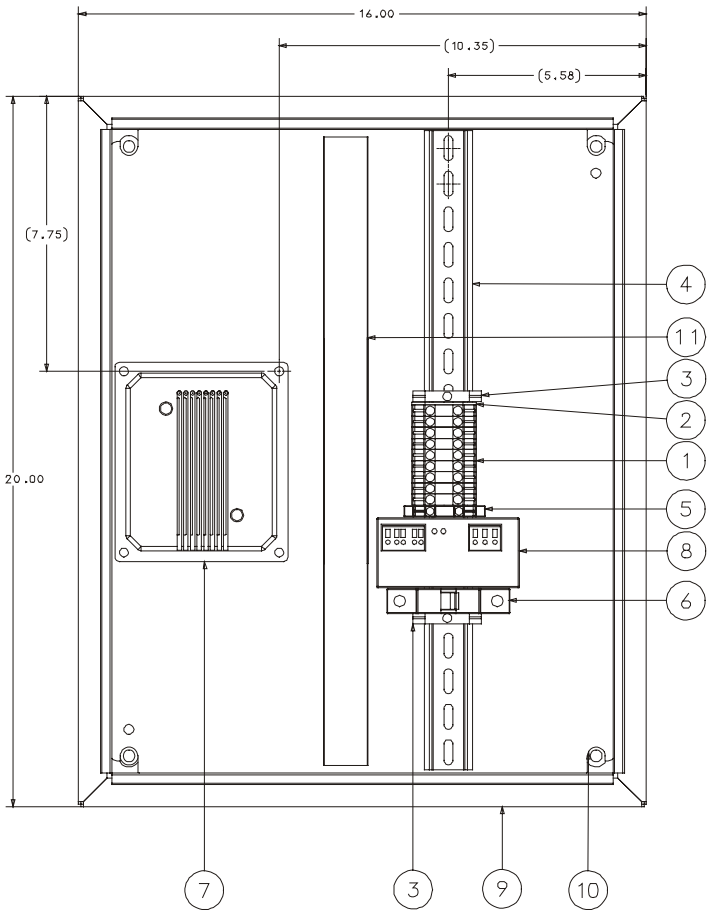
NOTES

6.1 eConnect - DIMENSIONS



Section 6
ILLUSTRATIONS AND PARTS LIST

6.2 eConnect - BASIC

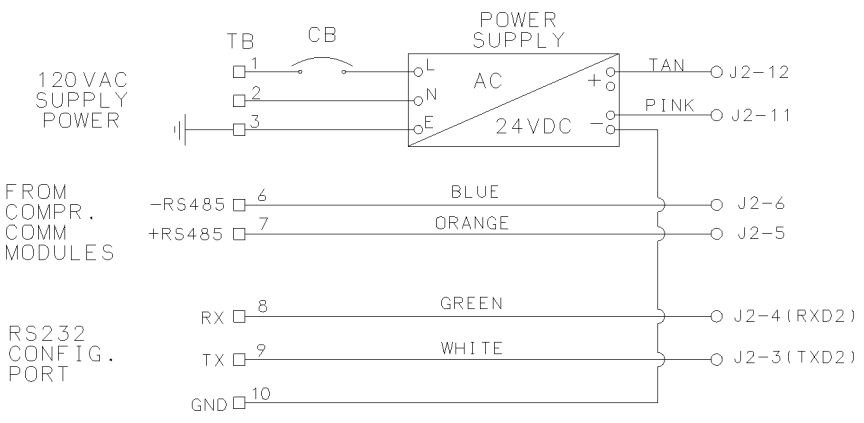


02250148-722

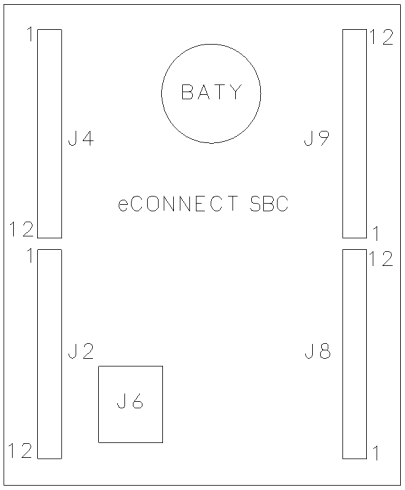
key number	*description*	*part number*	*quantity*
1	blk, term 45a 600v euro ch	02250057-241	9
2	blk, term end plate rk610 ch	02250057-244	1
3	blk, term end stop c383 ch	02250057-245	2
4	r, din 35mm (meters)	02250060-705	1
5	blk, term euro gnd c383sl6	02250095-903	1
6	cb, c-h hi inrush	02250131-179	1
7	mdl, supv ethernet interface	02250139-145	1
8	sply, pwr 24vdc 2.5a din	02250140-493	1
9	encl, e-conn 20x16x6 n4 emc	02250140-494	1
10	pnl, sub for e-conn 20x16 encl	02250140-495	1
11	duct, wiring 1 x 1.5" panduit	41370	1

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

6.3 eConnect - WIRING DIAGRAM (BASIC)



WIRE COLORS REFER TO
WIRES IN MULTICONDUCTOR
CABLE 02250140-599

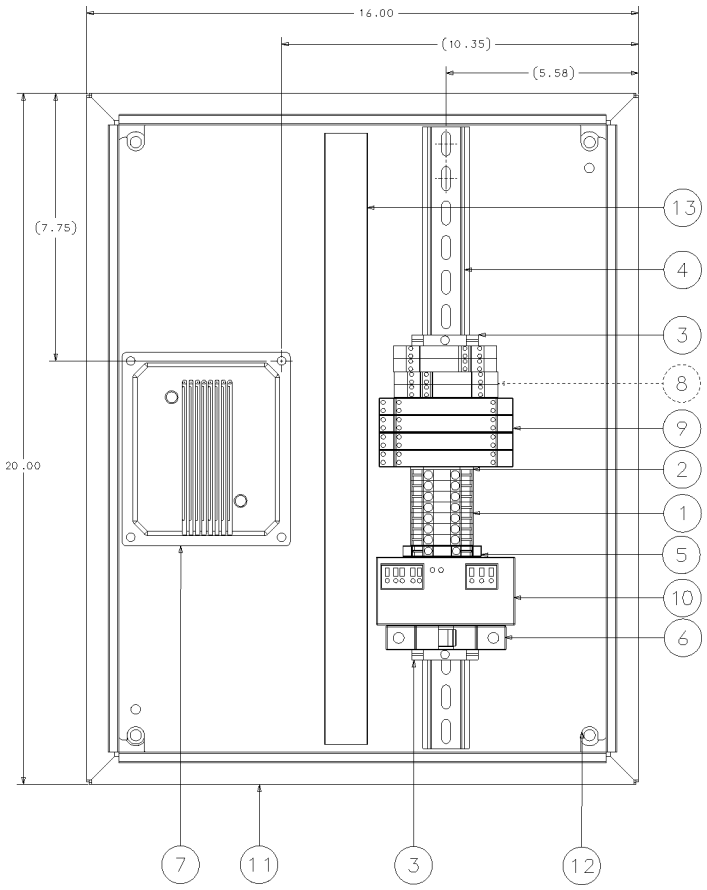


ETHERNET CONNECTION
AT J6 RJ-45 CONNECTOR

02250148-514

Section 6
ILLUSTRATIONS AND PARTS LIST

6.4 eConnect - OPTION ONE

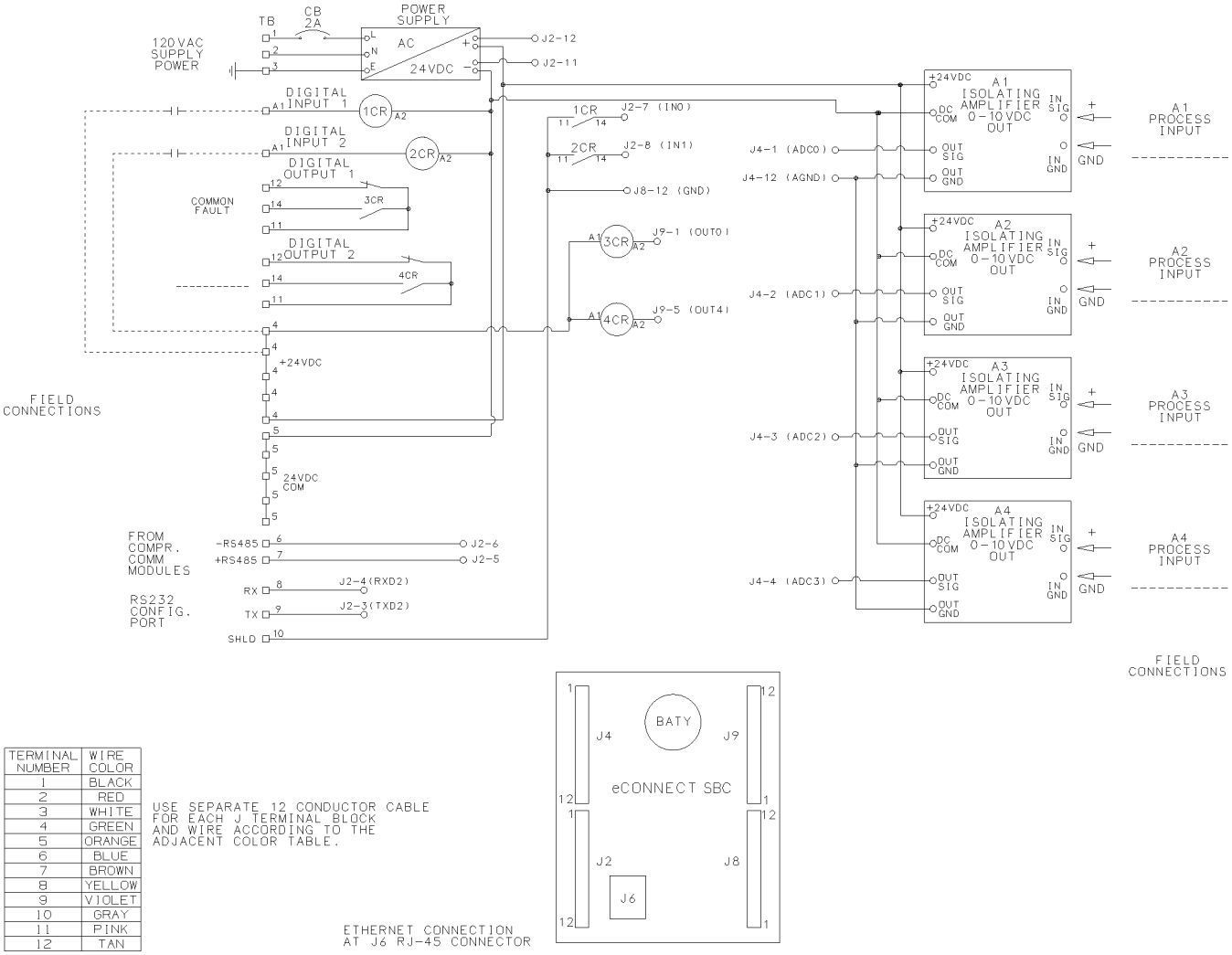


02250148-730R00

key number	*description*	*part number*	*quantity*
1	blk, term 45a 600v euro ch	02250057-241	7
2	blk, term end plate rk610 ch	02250057-244	1
3	blk,term end stop c383 ch	02250057-245	2
4	r, din 35mm (meters)	02250060-705	1
5	blk, term euro gnd c383sl6	02250095-903	1
6	cb, c-h hi inrush	02250131-179	1
7	mdl, supv ethernet interface	02250139-145	1
8	rly, sptd din 6a 24vdc coil	02250140-490	4
9	mdl, isolation amp din	02250140-491	4
10	sply, pwr 24vdc 2.5a din	02250140-493	1
11	encl, e-conn 20x16x6 n4 emc	02250140-494	1
12	pnl, sub for e-conn 20x16 encl	02250140-495	1
13	duct, wiring 1 x 1.5" panduit	41370	1

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

6.5 eConnect - WIRING DIAGRAM (OPTION ONE)



TERMINAL NUMBER	WIRE COLOR
1	BLACK
2	RED
3	WHITE
4	GREEN
5	ORANGE
6	BLUE
7	BROWN
8	YELLOW
9	VIOLET
10	GRAY
11	PINK
12	TAN

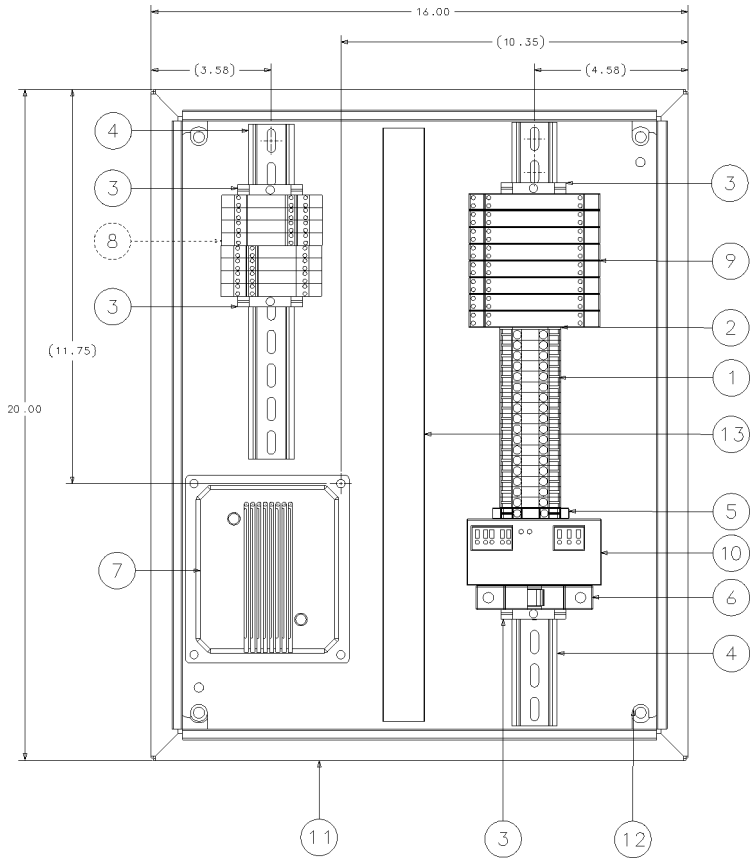
USE SEPARATE 12 CONDUCTOR CABLE FOR EACH J TERMINAL BLOCK AND WIRE ACCORDING TO THE ADJACENT COLOR TABLE.

ETHERNET CONNECTION AT J6 RJ-45 CONNECTOR

02250148-515

Section 6
ILLUSTRATIONS AND PARTS LIST

6.6 eConnect - OPTION TWO

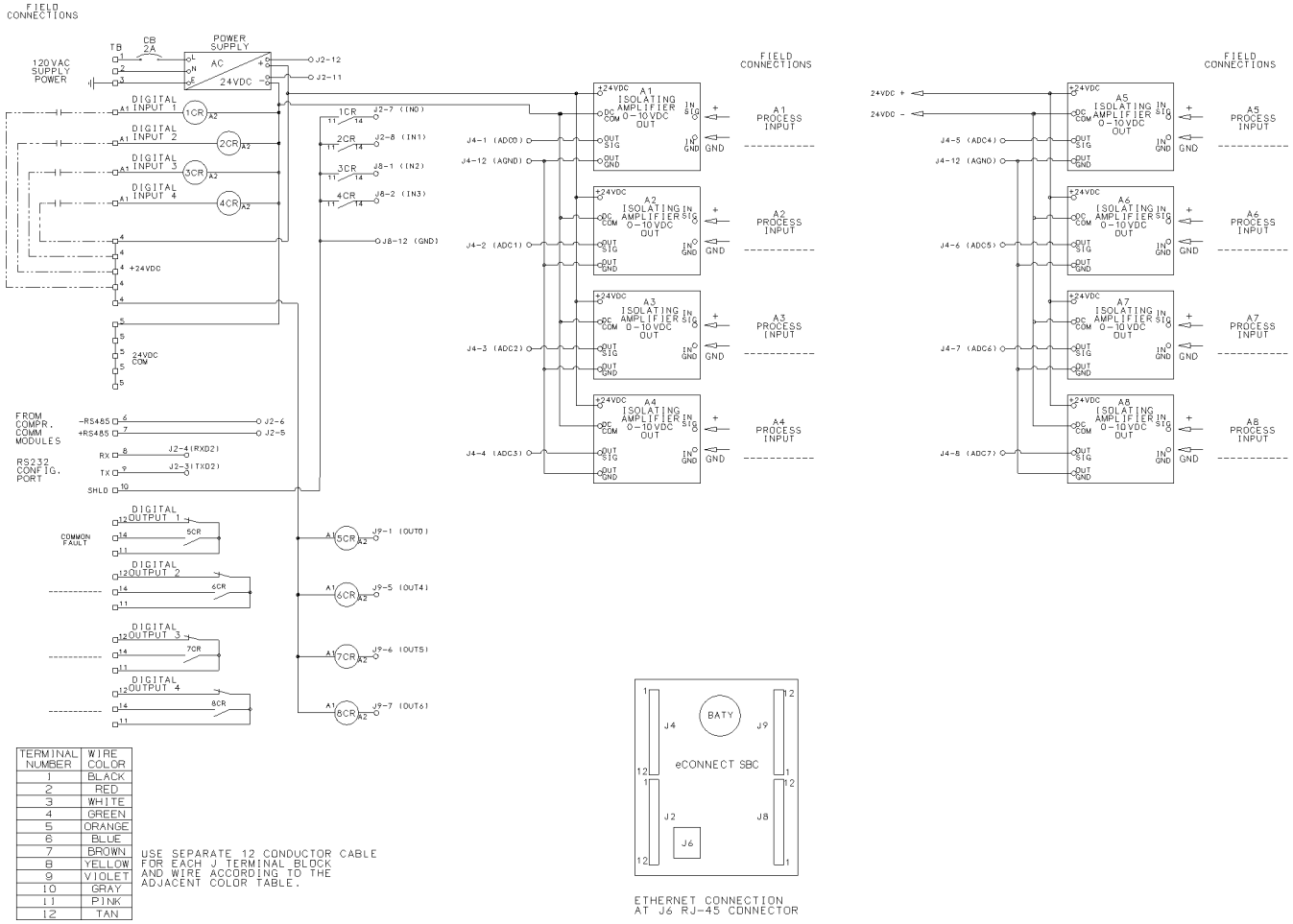


02250148-731R00

key number	*description*	*part number*	*quantity*
1	blk, term 45a 600v euro ch	02250057-241	17
2	blk, term end plate rk610 ch	02250057-244	1
3	blk, term end stop c383 ch	02250057-245	4
4	r, din 35mm (meters)	02250060-705	2
5	blk, term euro gnd c383sl6	02250095-903	1
6	cb, c-h hi inrush	02250131-179	1
7	mdl, supv ethernet interface	02250139-145	1
8	rly, sptd din 6a 24vdc coil	02250140-490	8
9	mdl, isolation amp din	02250140-491	8
10	sply, pwr 24vdc 2.5a din	02250140-493	1
11	encl, e-conn 20x16x6 n4 emc	02250140-494	1
12	pnl, sub for e-conn 20x16 encl	02250140-495	1
13	duct, wiring 1 x 1.5" panduit	41370	1

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

6.7 eConnect - (WIRING DIAGRAM) OPTION TWO



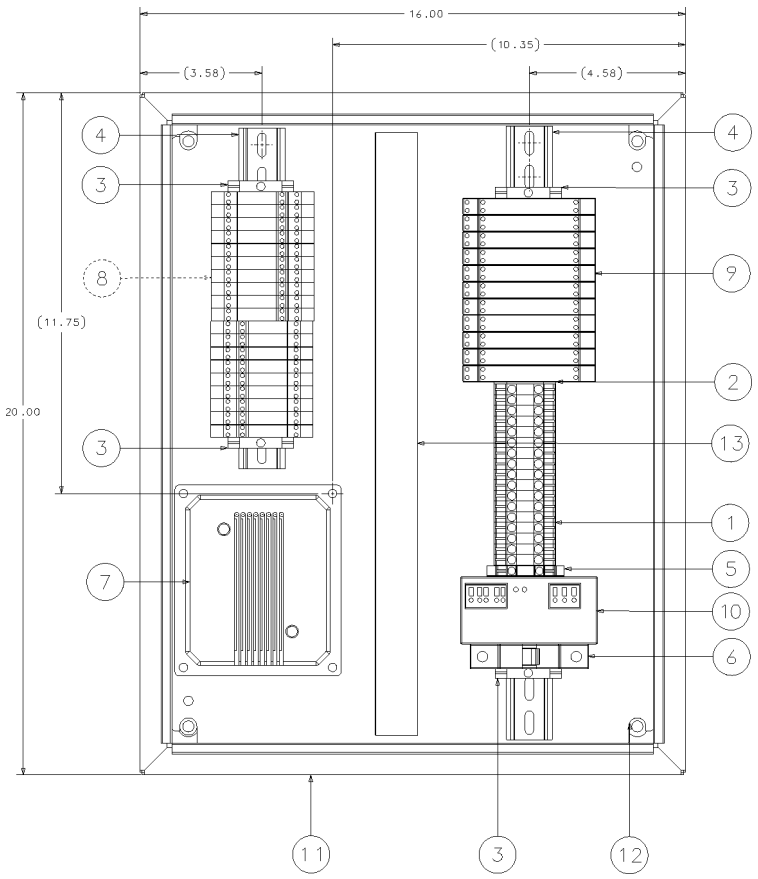
TERMINAL NUMBER	WIRE COLOR
1	BLACK
2	RED
3	WHITE
4	GREEN
5	ORANGE
6	BLUE
7	BROWN
8	YELLOW
9	VIOLET
10	GRAY
11	PINK
12	TAN

USE SEPARATE 12 CONDUCTOR CABLE FOR EACH J TERMINAL BLOCK AND WIRE ACCORDING TO THE ADJACENT COLOR TABLE.

02250148-516

Section 6
ILLUSTRATIONS AND PARTS LIST

6.8 eConnect - OPTION THREE

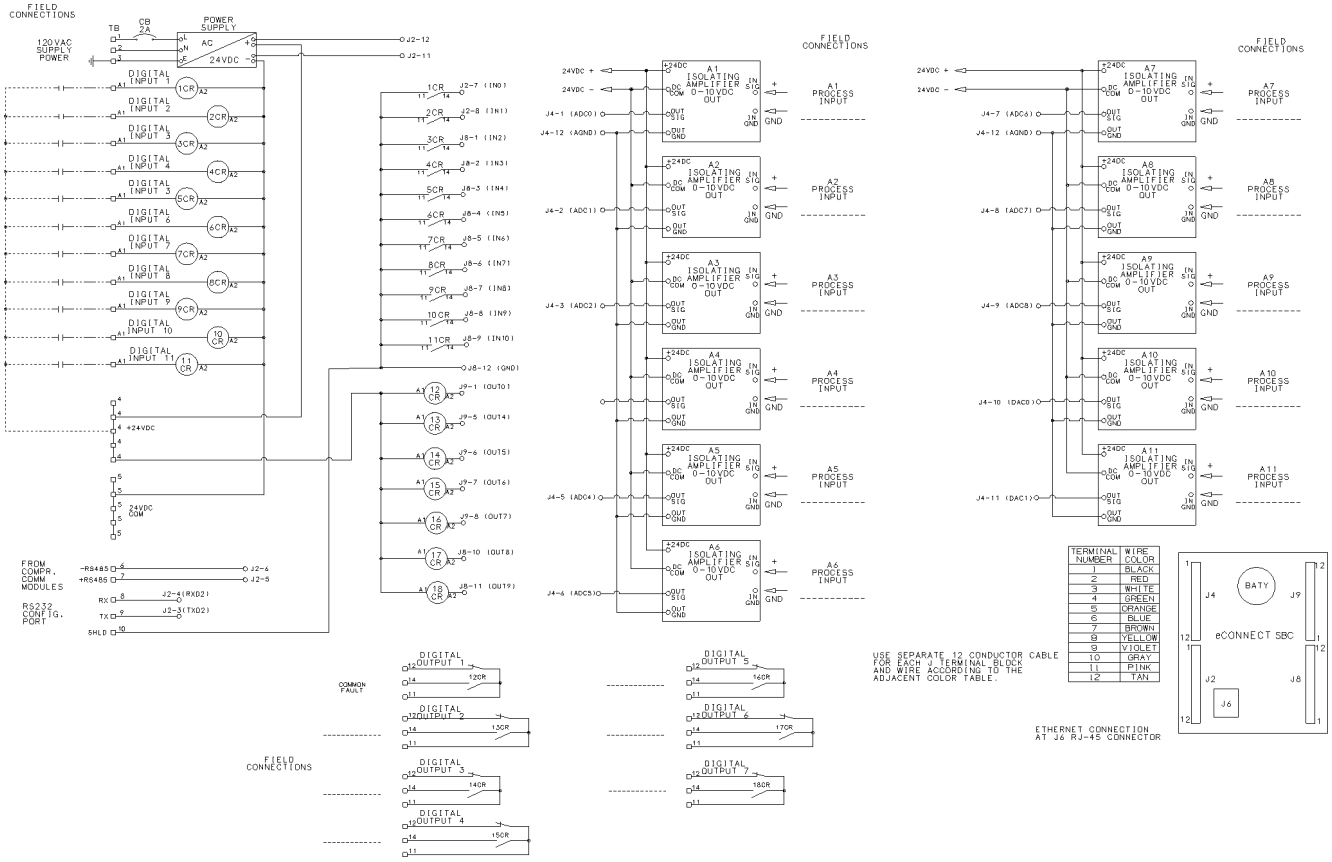


02250148-732R00

key number	*description*	*part number*	*quantity*
1	blk, term 45a 600v euro ch	02250057-241	17
2	blk, term end plate rk610 ch	02250057-244	1
3	blk, term end stop c383 ch	02250057-245	4
4	r, din 35mm (meters)	02250060-705	2
5	blk, term euro gnd c383sl6	02250095-903	1
6	cb, c-h hi inrush	02250131-179	1
7	mdl, supv ethernet interface	02250139-145	1
8	rly, sptd din 6a 24vdc coil	02250140-490	19
9	mdl, isolation amp din	02250140-491	11
10	sply, pwr 24vdc 2.5a din	02250140-493	1
11	encl, e-conn 20x16x6 n4 emc	02250140-494	1
12	pnl, sub for e-conn 20x16 encl	02250140-495	1
13	duct, wiring 1 x 1.5" panduit	41370	1

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

6.9 eConnect - WIRING DIAGRAM (OPTION THREE)



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